

ANNUAL PUBLIC HEALTH REPORT

OF THE

PROVINCE OF ASSAM

FOR THE YEAR

1921

BY

LIEUTENANT-COLONEL T. C. McCOMBIE YOUNG, M.D., D.P.H., I.M.S.,
DIRECTOR OF PUBLIC HEALTH, ASSAM.



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FROM

LIEUTENANT-COLONEL T. C. McCOMBIE YOUNG

M.D., D.P.H., I.M.S.,

DIRECTOR OF PUBLIC HEALTH, ASSAM,

To

THE SECOND SECRETARY TO THE GOVERNMENT OF ASSAM.

Shillong, the 8th May 1922.

SIR,

I HAVE the honour to submit herewith the Annual Public Health Report of the Province of Assam for the year 1921.

I have the honour to be,

SIR,

Your most obedient Servant,


T. C. McCOMBIE YOUNG, *Lieut.-Col., I.M.S.,*

Director of Public Health, Assam.

Enclosure:—

1 Report.

13 Statements.



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ANNUAL PUBLIC HEALTH REPORT

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1921.

SECTION I.

METEOROLOGY.

The following summary of the meteorological conditions in the province for the year 1921 has been furnished by the Director-General of Observatories :—

I. *The cold weather period January and February.*—Rainfall in the plains was 91 per cent. above normal in January, and 43 per cent. in defect in February. There was considerably more cloud than usual in January when mean temperature was also in slight excess. On the mean of the two months cloud proportion was in distinct excess in North Assam; humidity was in defect at Dibrugarh and Silchar: temperature was normal or in slight excess.

II. *The hot weather period March to May.*—Rainfall in the plains was above normal in all the months; by 41 per cent. in March, 35 per cent. in April and 19 per cent. in May. The total rainfall of the period was above normal in North Assam, but in defect in the south. There was more cloud than usual in March and April. On the mean of the season, cloud proportion and temperature were in excess in north Assam, and in the hills, humidity was roughly normal, except at Shillong, where it was in excess.

III. *The monsoon period June to September.*—Rainfall was above normal by 22 per cent. in June and 12 per cent. in September; it was normal in the other months. The total rainfall of the season was above normal except in North-east Assam. There was less cloud than usual over Gauhati and Silchar. Humidity and temperature did not differ appreciably from the normal.

IV. *The retreating monsoon period October to December.*—Rainfall in the plains was normal in October, 40 per cent. in defect in November, and 55 per cent. in excess in December. The total rainfall of the season was in excess only at Dibrugarh; it was in defect at all the other observing stations, the deficiency being as much as 15'' at Cherrapunji. Skies were less clouded than usual in November and more clouded in December. Temperature was below normal in October. On the mean of the season cloud proportion was in excess in north-east Assam, and in defect elsewhere; humidity and temperature were normal.

The rainfall was fairly well distributed throughout the year and that the total amount approximated to normal, except in the Garo Hills where there was an excess of 52.95 inches.

Price of food-grains and their connection with vital occurrences.

Prices of common rice for the year were cheaper in the year under report in all districts as compared with those of 1920.

SECTION II.

EUROPEAN ARMY.

(No remarks.)

SECTION III.

NATIVE ARMY.

(No remarks.)

SECTION IV.

JAILS.

(No remarks).

SECTION V.

GENERAL POPULATION.

(Vital Statistics).

2. As in previous years, the report deals with the plains districts of the province, the population of which according to the Census of 1921 was 6,854,367, an increase of 802,860 over that of 1911. The ratios in this report have been calculated on the census population of 1921.

General Census figures, provincial birth and death-rates. Comparison with other provinces.

The birth-rate per 1,000 of population for the province for the year 1921 was 29·63 as compared with 31·53 in 1920 and 31·78, the quinquennial average, and it is compared below with the rates recorded in other Indian provinces. Had it been calculated on the previous census population as was that of last year, it would have been 33·57 and there is, thus, an increase, instead of a decrease as compared with last year :—

Provinces.					Birth-rate.		
					1915-19.	1920.	1921.
1					2	3	4
Assam	...	...	...	...	32·19	31·53	29·63
Bengal	...	...	...	...	*	30·00	...*
Behar and Orissa	...	...	...	...	37·11	32·28	34·64
Central Provinces	...	...	...	...	43·50	39·17	37·90
Madras	...	...	...	...	30·1	28·42	27·05
Burma	...	...	...	...	33·60	33·78	29·85
Bombay	...	...	...	...	33·66	30·28	32·59
United Provinces	...	...	...	...	40·98	35·55	34·39
Punjab	...	...	...	...	42·9	42·91	41·5
North-West Frontier Province	...	...	...	...	36·51	29·82	27·25

* Not available.

The death-rate of the province for the year 1921 was 26·48 as compared below with the rates recorded for other provinces in India :—

Provinces.					Death-rate.		
					1915-19.	1920.	1921.
1					2	3	4
Assam	...	...	...	...	36·54	28·98	26·48
Bengal	...	...	...	...	*	32·7	...*
Behar and Orissa	...	...	...	...	39·40	30·94	32·83
Central Provinces	...	...	...	...	51·55	40·11	44·01
Madras	...	...	...	...	28·1	21·87	20·18
Burma	...	...	...	...	29·59	26·44	21·45
Bombay	...	...	...	...	44·16	28·65	26·00
United Provinces	...	...	...	...	44·30	37·23	39·57
Punjab	...	...	...	...	43·0	28·55	30·1
North-West Frontier Province	...	...	...	...	31·37	23·36	31·59

* Not available.

The death-rate, calculated on the population of last census for comparison with that of last year is 29.99 and it is therefore somewhat higher than that of 1920.

3. There were altogether 203,153 births registered in 1921, as compared with 190,835 in 1920, giving birth-rates of 29.63 and 31.53 respectively, against a quinquennial average of 31.78. Birth registration—General. All the districts in Assam Valley Division except that of Goalpara recorded birth-rates below the provincial average for the year and that of the preceding quinquennium. The highest birth-rate of 33.58, was recorded in the Goalpara district, followed by Sylhet (32.30) and Cachar (31.63). The excess of birth-rates over death-rates was 3.15 against 2.55 in 1920.

4. The total number of births registered in twenty-two urban areas was 3,821 and the birth-rate per mille was 26.15 as compared with 3,774 and 31.32, respectively, of the previous year. Birth registration in urban areas. As in previous years, the town of Barpeta recorded the highest rate of 45.52. Seven towns recorded birth-rates above the provincial urban average and fifteen below it. Towns recording low birth-rates are Karimganj (19.55), Nazira (19.37), Doom Dooma (16.35), Mangaldai (13.68), and Gouripur (9.27), but in these the accuracy of the figures is very doubtful and their smallness indicates lack of attention to registration rather than a paucity of births.

5. During the year under report, 199,332 births were registered in rural areas, yielding a ratio of 29.71 per mille, as compared with 187,061 and 31.54, respectively, in the previous year and 188,686 and 31.81 in the preceding quinquennium. Birth registration in rural areas. In some rural circles, a birth-rate of over 45 per 1,000 was recorded, and in others, less than 20 per 1,000, one, Margherita, returning the absurd figure of 2.37 per 1,000. These discrepancies are in all probability due to some error in compilation, and the facts are being referred to the Civil Surgeons concerned for further investigation.

6. The total number of deaths registered in Assam during the year 1921 amounted to 181,513 as compared with 175,403 during the previous year and 218,905 the average of the previous five years (1916-20), the corresponding ratios per mille being 26.48 for the year and 26.17 for the previous quinquennium. Death registration—General. A fairer test is, however, a comparison with the death-rate in the pre-influenzal quinquennium, 1913-17, which was 27.77 and which shows that we seem now to have reached the rates prevailing in the pre-influenzal quinquennium, and that the public health has recovered from the after effects of that visitation.

Compared with 1920, the district mortality during the year under review was lower in all districts except in Cachar, in which cholera and fevers were responsible for an increase, and as compared with the rate for the previous five years, there was a marked fall in all districts.

7. The total number of deaths recorded in urban areas during the year was 3,485, as compared with 2,972 in 1920, showing an increase of 513. Rates higher than the provincial urban average for the year were recorded in Habiganj town (38.69) due to cholera, dysentery and fevers including *kala-azar*, Goalpara (36.70) due to cholera, respiratory diseases and fevers including *kala-azar*, Dhubri (34.59) due to cholera and causes grouped under 'all other causes' and Doom Dooma (33.56) due to fevers and respiratory diseases. Death registration in urban areas.

8. A total of 178,028 deaths was registered in rural areas during the year, as compared with that of 172,431 in 1920, and calculated upon the census population of 1921, this figure gives an annual ratio of 26.53 per mille, as against the quinquennial average death-rate of 36.33 per mille and the pre-influenzal quinquennial ratio of 27.84. Death registration in rural areas.

Circle by circle, death-rates varying from 69.84 per 1,000 to 3.31 were returned, the extremes being due to errors in compilation and readjustments of population in the census. Those extremes, both high and low, are under departmental investigation.

9. The appended statement shows the results of the enquiries conducted by the Vaccination Inspecting Staff in compulsory urban areas to test the accuracy of registration of vital statistics during the non-vaccination season of the year 1921.

Registration in compulsory areas.
Prosecution under Act IV (B. C.)
of 1873.

Municipalities.	Unregistered vital occurrences detected during 12 months from October 1920 to September 1921.		Recorded vital occurrences during 12 months from October 1920 to September 1921.		Percentage of omissions.	
	Births.	Deaths.	Births.	Deaths.	Births.	Deaths.
1	2	3	4	5	6	7
Silchar ...	...	...	119	67	...	...
Hailakandi...	4	1	47	41	7.84	2.38
Sylhet ...	7	9	405	335	1.69	2.61
Karimganj...	2	3	55	34	3.51	8.11
Maulvi Bazar	8	3	67	37	10.66	7.50
Habiganj ...	11	8	182	144	5.69	5.26
Sunamganj...	11	5	101	33	9.82	13.16
Dhubri ...	14	10	159	62	8.09	13.89
Goalpara ...	2	2	42	41	4.54	4.65
Gauhati ...	22	9	409	416	5.10	2.11
Barpeta ...	26	6	669	439	3.74	1.35
Tezpur ...	8	5	183	95	4.19	5.00
Mangaldai ...	2	...	10	12	16.66	...
Nowgong ...	9	8	189	200	4.55	3.84
Sibsagar ...	4	...	136	71	2.86	...
Nazira ...	7	2	54	22	11.47	8.33
Jorhat ...	35	9	104	26	25.18	25.71
Golaghat ...	16	6	103	70	13.44	7.89
Dibrugarh ...	43	23	273	133	13.61	14.74
North Lakhimpur	...	...	53	65	...	...
Dumduma ...	...	...	13	16	...	...
Shillong ...	11	2	491	239	2.19	.83
Total	242	111	3,864	2,598	5.89	3.61

In general, the average fine inflicted for a failure to register an occurrence of a birth and death amounted to Re. 0-14-8. Thirty five omissions of births and 9 omissions of deaths discovered in Jorhat were not reported to the Magistrate for prosecution, for reasons not yet explained.

10. The subjoined table shows the recorded birth and death rates in hill districts:—

Registration in hill districts.

Districts.	1921.		1920.	
	Birth-rate	Death-rate.	Birth-rate.	Death-rate.
1	2	3	4	5
Khasi and Jaintia Hills	29.71	14.44	23.82	17.22
Naga Hills ...	17.56	22.22	12.85	24.40
Lushai Hills ...	41.31	33.95	41.99	34.39
Garro Hills ...	22.88	20.37	26.40	21.91

The figures show no marked departure from the health conditions of the previous year. A mild type of influenza was prevalent in the Lushai Hills. In the Garo Hills, *kala-azar* is prevalent, appropriate measures for its treatment have been undertaken, and are being expanded to meet the demand. An in-door hospital has been built at Tura, out centres are being opened in the hills, manned, as far as possible, by Garo Sub-Assistant Surgeons, and special arrangements for the treatment of the disease at the foot of the hills on the boundaries of the Goalpara district have been successfully initiated. In Shillong, the season's crop of zymotics consisted of 17 cases of diphtheria from the European Schools, 12 cases of enteric, 11 cases of measles, 2 cases of chicken-pox and 8 cases of mumps. Diphtheria in Shillong has for years been a cause of anxiety and endeavours are now being made to cope with it by modern methods of the detection and immunisation of susceptible children. The enteric infection was as usual imported in the food supplies from the hill villages amongst whose inhabitants it is more or less endemic, the cases being consequently sporadic and more or less isolated and the source of the infection difficult to trace. The cases of measles, chicken-pox and mumps were due to imported infections. With the provision of isolation accommodation at the Nursing Home, and for poorer class Indian patients, at the Isolation Hospital, Maolai, the difficulty of dealing with such infectious cases is now greatly reduced.

11. The appended table shows the birth and death rates reported from tea estate Registration in Tea Gardens. during the year 1921, as calculated on the census population of 1921 :—

Districts.						Birth-rate.	Death-rate.
1						2	3
Cachar	...	...	...	...	...	26·07	28·95
Sylhet	...	...	...	...	...	20·51	18·45
Goalpara	...	...	...	...	...	18·48	16·23
Kamrup	...	...	...	...	...	14·59	14·20
Darrang	...	...	...	...	...	24·79	26·23
Nowgong	...	...	...	...	...	22·90	25·63
Sibsagar	...	...	...	...	...	25·41	23·65
Lakhimpur	...	...	...	...	...	32·98	35·25
Total						25·65	25·80

As compared with the birth and death rates of the year 1920, there was a fall in the death-rate while the birth-rate remains almost the same. The excess of death-rates over birth-rates in the districts of Cachar, Darrang, Nowgong and Lakhimpur calls for comment in view of the general healthiness of the year. There appears to have been a recrudescence of influenza in the districts of Cachar and Lakhimpur, which may have contributed to the defect.

12. The total number of births and deaths registered within railway limits amounted to 122 and 356, respectively, as compared with 42 and 512 in the year 1920.

13. The highest birth-rate of 3·15 per mille was recorded in the month of January the lowest rate of 1·76 and 1·89 being recorded in the months of June and July, respectively.

Seasonal incidence of births and deaths.

From the Annual Form No. III, it will be seen that mortality was fairly evenly distributed over different seasons of the year, the highest rates of 2·65 being recorded in the month of May and the lowest rate of 1·84 in the month of February.

14. The rates of mortality among infants, calculated on the registered number of births, were 200·90 for males, 172·50 for females, total 187·23 as compared with 202·78, 171·38 and 187·57 of the previous year. As usual the mortality-rate among infants

Mortality according to age, sex and class.

under one year of age was higher than that of any other age group, while the lowest rates were recorded for the age group 10 to 15 years. As in previous years the total combined mortality amongst males was higher than that amongst females in the ratio of 114 to 100. The variations in the death-rate amongst the different classes of the community were as follows:—"Other classes" 33·99, "Muhammadans" 26·46, "Hindus" 24·85, "Budhists" 20·32 and "Christians" 17·58. Unreliably high or low death-rates were recorded amongst Budhists, "Other classes" and "Christians" in some districts due to the smallness of the population in these communities and the probability of the inclusion under these heads of mortality among other communities with a larger population, but the total figures on which the rates for the first and the latter two communities are calculated are small, and the figures unreliable.

15. The Vaccination Inspecting Staff verified the records of 46,332 vital occurrences during the year as against 61,142 in the previous year and it appears that their activities in this respect require stimulation. The highest proportion of omissions was detected in Goalpara and Kamrup, and the lowest in Lakhimpur, Sibsagar and Nowgong.

General accuracy of vital statistics and improvement effected during the year. remains unchanged.

Four rewards of Rs. 20 each for each plains subdivision to Gaonburas for good work in collection of vital statistics were sanctioned for the first time last year and it is too early to express an opinion on the result.

SECTION VI.

HISTORY OF CHIEF DISEASES.

17. The annexed statement compares the ratios under the chief heads of mortality during the year 1921 with the average ratios of the previous ten years:—

Diseases.	1911-20.			1921.		
	Urban.	Rural.	Combined.	Urban.	Rural.	Combined.
1	2	3	4	5	6	7
Cholera ...	1·93	2·47	2·46	1·34	1·88	1·87
Small-pox ...	·64	·47	·47	·02	·41	·40
Plague ...	...	...	...	...	...	...
Fevers ...	8·44	17·35	17·18	6·53	15·90	15·70
Dysentery and Diarrhoea ...	3·42	2·35	2·37	3·81	1·63	1·68
Respiratory diseases ...	3·10	2·30	2·31	3·90	1·37	1·42
Injuries ...	·53	·33	·33	·49	·27	·28
All other causes ...	7·44	6·09	6·12	7·74	5·05	5·11
Total ...	25·55	31·38	31·27	23·85	26·53	26·48

The death-rate for the year was less than the average rate for the last ten years by 4·79.

INFLUENZA.

The total number of deaths from influenza reported during the year was 3,170, as against 5,362 in the previous year and no acute epidemic of the disease was reported from any district.

18.—CHOLERA.

Districts.							Death-rate per mille.			
							1911-20.	1921.		
1							2	3		
Cachar	...	...	...	...	...	...	2·41	2·92
Sylhet	...	...	...	...	...	...	2·46	2·84
Goalpara	...	...	...	...	...	...	1·92	3·63
Kamrup	...	...	...	...	...	...	3·27	1·64
Darrang	...	...	...	...	...	...	3·51	·65
Nowgong	...	...	...	...	...	...	3·67	1·54
Sibsagar	...	...	...	...	...	...	2·02	·34
Lakhimpur	...	...	...	...	...	...	1·01	·22
Total							2·46	1·87

The district of Goalpara had a higher mortality from cholera than that of the decennial average for the district. The predisposing cause would appear to have been the advent of floods resulting in scarcity of food stuffs and economic privations, in the train of which followed epidemic cholera.

19. Towns returning high death-rates from cholera were Gouripur with (7.42), Habiganj with (5.57), Karimganj with (5.27), Dhubri with (4.62) and Goalpara with (3.05). Among these towns, none were possessed of a protected water-supply, (although Dhubri will have a pipe water-supply of filtered water in the near future), and their sanitary arrangements are otherwise primitive and an insufficient protection against outbreaks of cholera. Nine towns escaped visitation by the disease.

Among rural circles, from Bijni Duars in Goalpara a mortality of 22·94 per cent. was reported. The population of this circle which was 29,173 in 1911, in the 1921 Census, was found to be 42,755 and its large immigrant population living under new and unsettled conditions appears to have suffered very heavily from cholera, if the statistics are reliable. Hajo circle in the Kamrup district, Karimganj, Sylhet, Kannaighat circles in the Sylhet district, Dhubri circle in the Goalpara district and Raha circle in the Nowgong district also reported somewhat high ratios. Thirteen rural circles escaped the disease.

20. Nine hundred and seventy-seven deaths from cholera were reported from tea estates during the year 1921 against 670 deaths in 1920, the ratios per mille being '99 and '73, respectively. The highest rates, 2·68 and 2·24, were reported from Kamrup and Cachar, respectively.

21.—SMALL-POX.

	Districts.	Death-rate per mille.	
		1911-20.	1921.
	1	2	3
Cachar		·34	·003
Sylhet		·33	·29
Goalpara		·61	·48
Kamrup		1·24	·27
Darrang		·44	2·38
Nowgong		·31	·40
Sibsagar		·58	·10
Lakhimpur		·08	·07
Total		·47	·40

The death-rate from small-pox was .40 as compared with .47 in the preceding decennium. The disease was epidemic in the Darrang district which reported the highest rate of any district, *viz.*, 2.38. The epidemic was confined to certain mauzas in the Mangaldai subdivision where vaccination had been neglected.

22. Golaghat (.27), Sunamganj (.2) and Gauhati (.06) are the only towns in which a few sporadic cases occurred, all other towns being free from the disease. In Golaghat the cause is not far to seek, namely laxity in the working of the Compulsory Vaccination Act.

High rates of mortality from small-pox in individual towns and rural areas.

Among rural circles, Panery, Kalaigaon, Majikuchi, Sorabari, Chinkona, Harisinga Bubagan, Dakua, Silpota and Sikhar mauzas in the Mangaldai subdivision of the Darrang district were affected. The death-rate of 4.4 reported from the Habiganj thana was also high. The details of the vaccination arrangement of this subdivision have lately been inspected by the Assistant Director of Public Health and certain defects noted by him have been brought to the notice of the Civil Surgeon and the Local Board with a view to improvement.

23.—FEVERS.

Districts.							Death-rate per mille.	
							1911-20.	1921.
1							2	3
Cachar	...	...	...	...	...	...	14.17	17.24
Sylhet	...	...	...	...	...	...	14.93	15.27
Goalpara	...	...	...	...	...	...	31.35	27.96
Kamrup	...	...	...	...	...	...	18.89	14.49
Darrang	...	...	...	...	...	...	20.14	14.94
Nowgong	...	...	...	...	...	...	19.04	17.19
Sibsagar	...	...	...	...	...	...	13.44	10.52
Lakhimpur	...	...	...	...	...	...	13.32	8.75
Total							17.18	15.70

The death-rate from fever during the year 1921 was 15.7 as compared with 18.57 in the previous year. The average of the decennium 1911-20 was 17.18 and of the pre-influenzal decennium 1908-1917, it was 14.91. The mortality from fevers would therefore appear to have returned to about the normal of the pre-influenzal period.

The province employs no malarial research officer and such anti-malarial measures as have been carried out from time to time have been devised and supervised by this department. Some of this anti-malarial work, done in former years is now beginning to show results, for instance the Lumding anti-malarial scheme which, with some recent additions by Dr. Weldon, Railway Medical Officer at Lumding, was framed and drawn up by this department, has now been completed and its results are becoming evident. From the statistics of the Railway Hospital at Lumding for the year 1921, it appears that the number of attacks of malaria per head per annum has been nearly halved, as compared with the average of the five years preceding the commencement of the work, and that the splenic index of the bazar has been very largely reduced since the scheme has been in operation. Similiar favourable results are reported from Pasighat where an anti-malarial scheme framed by this department has had excellent results. Anti-malarial observations have also been in progress at Messrs. Bird and Co's., Sugar Estates in Kamrup, and a visit from Lieutenant-Colonel Christophers, C.I.E., I.M.S., was arranged at the end of the year to help us with advice on what had been ascertained, and in regard to further observations in extension of the work already done. The Medical Officer of the Estate Dr. Challam under the guidance of this department is now working on the lines suggested by Lieutenant-Colonel Christophers, and when a further series of observations is completed, information will be available, which should be of great value to the proprietors of the estate and of useful future application in what may prove to be a new industry for the province.

24. The rates reported from the towns of Golaghat (18·33), Goalpara (15·61), Doom Dooma (13·76), Habiganj (11·99) and North Lakhimpur (11·69) are high. The high rates in Habiganj and Goalpara are explicable in the light of our knowledge that *kala-azar* is present in these towns, but those of Doom Dooma and of North Lakhimpur are less clear. The population of both of these towns is small and the apparently high ratios may have been artificially induced by misclassification, as no medical Registrar of Births and Deaths has been appointed.

In general, the urban fever death-rate is low and reflects the comparative healthiness of the year. As regards rural circles, Dudnai in the Goalpara district reported the highest rate. In this thana *kala-azar* has for years prevailed in hyper-endemic form and a special hospital for its treatment has been provided. Eight circles in the Sylhet district, ten in the Goalpara district, two each in Cachar and Darrang districts and one Nowgong district reported high rates. In all of them except in Cachar, *kala-azar* is prevalent and has contributed to the increase.

25.—*Kala-azar*.

Districts.	1912.	1913.	1914.	1915.	1916.	1917.	1918.	1919.	1920.	1921.
1	2	3	4	5	6	7	8	9	10	11
Cachar ...	2	8	...	2	...	1	4	3	5	1
Sylhet ...	394	444	203	159	63	31	34	7	26	183
Goalpara ...	192	206	138	55	106	153	313	311	602	557
Kamrup ...	385	294	215	283	277	287	564	423	931	755
Darrang ...	563	399	317	310	320	245	263	171	256	169
Nowgong...	303	417	393	419	451	591	565	559	846	1,172
Sibsagar ...	31	29	24	7	28	181	235	168	114	121
Lakhimpur ...	...	...	8	...	3	1	3	5	...	3
Garo Hills ...	16	15	10	12	6	18	22	20	18	26
Total ...	1,891	1,812	1,308	1,247	1,254	1,503	2,003	1,637	2,798	2,987

The recorded mortality from *kala-azar* during the year is somewhat higher than that of the previous year, owing to the rise in the number of deaths reported from Nowgong, but in the other plains districts in the Assam Valley there is a diminution. In Sylhet also there is a small reported increase, which however coincides with the development of our efforts in the district, and is probably, to some extent, due to an increased attention to the disease leading to a subtraction from the fever deaths, and an addition to the *kala-azar* deaths. In any case, the actual numbers are very small in proportion to the population of the district.

Throughout the year the *kala-azar* work has absorbed the greater part of the energies of the department. The facilities for treatment have been expanded to include as far as possible, every area in which *kala-azar* patients require treatment and particularly in the endemic areas in Sylhet district have a number of new in-door hospitals and out-door treatment centres been opened. During the latter part of the year to prevent overlapping of effort, and to co-ordinate the efforts of the departments both of curative and preventive medicine in coping with the disease, some administrative changes were effected whereby district Civil Surgeons were placed in more direct charge of the *kala-azar* operations in their districts. This inter-departmental co-operation has been greatly facilitated by the unfailing help and advice received from the Inspector General of Civil Hospitals Colonel J. Garvie, I.M.S., and also from Lieutenant-Colonel B. H. Deare, I.M.S., who officiated for the former while on leave. Following the directions of the Hon'ble Minister of Local Self-Government the policy of encouraging the treatment of *kala-azar* in all existing Local Board dispensaries in *kala-azar* infected areas was promoted, and a growing tendency to look upon *kala-azar* as a disease for the treatment of which a special staff on special rates of pay was required, has been discouraged.

During the year 8 Assistant Surgeons and 35 Sub-Assistant Surgeons were at work on special *kala-azar* duty, and twelve in-door hospitals with a total of 226 beds were open for the reception of patients, 5 of which were newly opened during the year, while 7 existing hospitals were provided with *kala-azar* wards, the total number of beds in which was 144. Two Zemindari hospitals provided 42 beds, and a special research ward at the Research Institute, Shillong, provided 12 beds and thus, accommodation for 382 in-door patients was provided by the close of the year in institutions under the control of the Public Health Department. There were also 23 special *kala-azar* dispensaries for out-patients, working 33 subsidiary out-centres, while 6 Government dispensaries and 43 Local Board dispensaries were equipped with the necessary appliances and drugs to enable them to treat out-door *kala-azar* patients. The total number of patients treated in these various institutions during the year was 15,880. The figure shows that the treatment is popular and tours of inspection show that it is rightly so, and that very good work is being done.

It is probable that the popularity of the treatment has brought many chronic malaria cases upon our lists of patients under treatment, and up to now it has not been practicable in out-patient work to make a differential diagnosis in these cases. After the close of the year, however, apparatus for the performance of a new blood test, the 'Formol-gel' reaction, which will afford a reasonably reliable method of diagnosis in the majority of such doubtful cases, was issued for use.

This probability that an appreciable number of the 15,880 cases were suffering from chronic malaria somewhat alleviates one's dissatisfaction at the considerable proportion of them who cease treatment before the full course of injections which is likely to be curative, has been administered. The *kala-azar* regulations No. 6052M., dated the 25th October 1920, under which we can deal with persons who prematurely stop treatment, have not in practice proved usefully applicable in the form in which they appear, as owing to the pre-occupation of District Magistrates with Non-Co-operation, it has not proved possible to deal with the large numbers of such persons who have been reported for ceasing treatment prematurely. One observes, however, that energetic Sub-Assistant Surgeons in charge of *kala-azar* infected areas, who command their confidence of patients, and who are assiduous in their visits to infected villages and in persuasion of patients to undergo, or resume treatment, have few cases who fail to complete treatment. The regulations are useful in that they can be used to re-enforce the Sub-Assistant Surgeons' persuasions, and these are the lines on which they are now being utilised.

Recurrences or reinfections come to notice in a small percentage of fully treated patients, but this is not to be wondered at, as in the plains, the treated patient usually continues to live in the house in which he became infected, and in view of the undoubted potency and persistence of site infection it is little wonder if re-infection occurs, and there is no criterion by which a re-infection can be distinguished from a recurrence. If our finances would permit of the removal from infected sites of all infected families, as well as of treating the patients, we should be more rapidly successful in dealing with the outbreak, but this is not at present within practical politics.

An interesting light on this aspect of the work is shed by the progress of events in the North Cachar Hills, to deal with the outbreak in which we built a hospital at Moibong and extended that at Haflong. The hill man usually turns a *kala-azar* patient out of his village, burns the infected house and moves to a new site. The result of this eviction of patients was that all the cases sought admission to hospital, and that of removal from the infected site was that the cured patient returned to an uninfected house. The effect was that the outbreak for the time being appears to be almost extinguished in the North Cachar Hills, few patients are coming forward, and the opinion elicited in Moibong Bazar, on 'hât' day when people from all the villages for many miles assemble, was to the effect that there are no more cases and that those who were cured are living in new houses.

Unfortunately the plainsman does not or cannot shift his house with the same facility, and we shall be longer in seeing the result of our work in an abatement of the disease in the plains, as we cannot yet attempt house removal on any large scale, but already the Assam Valley Districts, except for Nowgong, in which *kala-azar* has always flourished exceedingly, are showing an abatement in the *kala-azar* mortality, perhaps most marked in Mangaldai, an area of *kala-azar* hyperendemicity in which the work has been particularly well administered by the Civil Surgeon and his assistant, Captain Madan Mohan Maitra.

In general, it seems legitimate to reckon that we have now reached our maximum effort, and that the results which are beginning to be felt in decreased mortality

and a smaller number of new cases, should be more evident in next year's statistics. Looking at the human aspect of the case, to one who has had years of experience of *kala-azar* in the day before treatment with antimony tartrate was discovered, it is indeed a stimulating sight to see the troops of patients, mostly children attending our dispensaries and hospitals and voluntarily and cheerfully undergoing a treatment in which their chances of recovery are now equal to what were formerly the chances of almost certain death. One may be permitted to dwell with some satisfaction on the number of lives out of these 15,880 patients which have undoubtedly been saved as the result of this work and one may perhaps be pardoned if one ventures the opinion that Government money has rarely been spent to better purpose in the saving of life and of health.

26.—DYSENTERY AND DIARRHŒA.

Districts.	Death-rate per mille.	
	1911-20.	1921.
1	2	3
Cachar	2.45	1.93
Sylhet	2.03	1.52
Goalpara ... ..	.43	.33
Kamrup ... ..	.92	1.00
Darrang	4.22	2.63
Nowgong	1.63	.82
Sibsagar	4.25	2.66
Lakhimpur	4.85	3.23
Total	2.37	1.68

The death-rate from dysentery and diarrhœa was 1.68 as compared with 2.37, the decennial average showing a satisfactory fall in the mortality rate under this head.

The mortality on tea gardens from these causes during the year was 5.25 as compared with 6.95 in 1920, the highest rate for the year being 7.21 in Lakhimpur and the lowest 2.30 in Kamrup. The mortality from these causes on tea estates still compares unfavourably with that in the general population, and allowing for inaccuracy in registration in the latter there is still a large balance on the wrong side in the tea industry. Speaking generally, there is little doubt that something like half the mortality and inefficiency among the labour population of tea estates is due to bowel complaints, and much of it is preventible by the introduction of modern methods of refuse disposal, as lack of conservancy, hook-worm infestation, and bowel diseases work together in a vicious circle to maintain the high mortality rates in question. During the period of financial depression through which the tea industry has been passing the time has not been propitious for urging the introduction of appliances which will involve a fairly high initial expenditure, although the probability of the returns on such expenditure in an increased efficiency among the labour force is now more largely accepted. It might perhaps be made more generally known that this department is prepared to advise on how such appliances for the disposal of sewage may best be adapted to meet the needs of individual tea estates, and it is to be hoped that with the financial revival of the industry, the reviving interest in this most promising line of work may continue and increase.

27. *Plague*.—No case of plague was reported during the year.

28. *Other causes*.—The deaths returned during 1921 under the headings "injuries" and "other causes" numbered 1,923 and 35,036 yielding ratios of .28 and 5.11, respectively, against .32 and 5.41 in 1920.

The mortality from "Respiratory Diseases" which include deaths from influenza, which are returned as such, was 1.42 against 2.14 in 1920.

SECTION VII.

VACCINATION.

(Published separately).

SECTION VIII.

SANITARY WORKS—MILITARY.

(No remarks).

SECTION IX.

SANITARY WORKS—CIVIL.

General.

29. There were sixteen Municipalities and nine Unions in the province during the year.

30. The total annual income of these Municipalities and Unions, including the opening balance, amounted to Rs. 9,51,402 as compared with Rs. 8,23,712 in the year 1920. Rupees 4,09,608 or 43·05 per cent. of the total income was spent on sanitary works, original and recurring, as compared with Rs. 3,81,818 and 46·43, respectively, in the previous year. The percentage of expenditure on sanitation in Municipalities and Unions was as follows :—

1. Dhubri Municipality	...	...	...	67·46
2. Tinsukia Union	...	...	...	52·63
3. Jorhat Municipality	...	...	...	52·59
4. Gauhati	...	...	...	51·61
5. Dibrugarh	...	...	...	51·35
6. Silchar	...	...	...	48·87
7. Goalpara	...	...	...	48·41
8. Shillong	...	...	...	46·26
9. Tezpur	...	...	...	44·92
10. Sylhet	...	...	...	44·44
11. Gouripur Union	...	...	...	37·89
12. Habiganj Municipality	...	...	...	32·68
13. Doom Dooma Union	...	...	...	31·94
14. Karimganj Municipality	...	...	...	31·12
15. Sunanganj	...	...	...	26·78
16. Nowgong	...	...	...	25·97
17. Maulvi Bazar Union	...	...	...	24·85
18. Hailakandi	...	...	...	21·94
19. Sibsagar Municipality	...	...	...	21·16
20. Polashbari Union	...	...	...	20·84
21. Barpeta Municipality	...	...	...	20·55
22. North Lakhimpur Union	...	...	...	20·07
23. Golaghat Municipality	...	...	...	17·27
24. Nazira Union	...	...	...	15·73
25. Mangaldai	...	...	...	9·04

The construction of new water-works in Dhubri and of a municipal market in Tinsukia accounts for the high percentage of expenditure on sanitation in these towns.

The following statement shows the expenditure for sanitary purposes during the year 1921 as compared with that in the year 1920 :—

Heads of expenditure.	Total expenditure.		Difference.	
	1921	1920	Increase	Decrease.
	Rs.	Rs.	Rs.	Rs.
1. Conservancy including establishment, road watering, latrine, etc.	2,29,353	2,05,837	23,516	...
2. Drainage	19,943	29,096	...	9,153
3. Water-supply	1,34,463	1,35,360	...	897
4. Disposal of the dead	499	519	...	20
5. Markets and slaughter houses	9,827	6,315	3,512	...
6. Vaccination	3,163	2,785	378	...
7. Other sanitary works	12,360	4,906	7,454	...
Total	4,09,608	3,84,818	34,860	10,070
8. Construction and maintenance of roads	81,530	69,844	11,686	...
Total including roads	4,91,138	4,54,662	46,546	10,070

The progressive increase of expenditure under conservancy is so far satisfactory in that it shows some realisation of what is the most pressing sanitary need of the towns of the province, but much remains to be done before the very rudimentary conservancy arrangements of the smaller towns can be viewed with satisfaction.

31. An expenditure of Rs. 20,000 was incurred on account of the pay and allowance of the eighteen Urban and Rural Health Officers during the year 1921-22. An expenditure of Rs. 800 was incurred on jungle clearing and larvicidal measures in connection with the anti-malaria work at Pasighat. A sum of Rs. 1,46,102 was allotted to the Local Boards in both valleys from the provincial revenues for the improvement of their water supplies.

Surma Valley Division.—The pipe water supplies of Silchar and Sylhet were satisfactorily maintained, samples of water from each being examined bacteriologically every month in the Public Health Laboratory, advice for the rectification of the defects so detected being given. Certain drains in Silchar were made *pucca* at a cost of Rs. 2,372.

The conservancy system of Sylhet suffered serious detriment as the result of a turn of Municipal politics whereby, in the name of retrenchment, night-soil carts and animal traction were replaced by hand removal, with results that were to be expected. These developments are particularly disappointing in view of the efforts that with the help of a Government grant have for years been made to improve the very backward conservancy system of this town, and the incident raises the question as to whether more control should not be exercised by Government over the results of the activities of Municipal politicians when these are likely to endanger the health of the community.

No important sanitary work was executed in the year in any town in this division.

Assam Valley Division.—The only considerable town in the province which is now unprovided with a filtered water-supply is that of Dibrugarh which refused the offer of one during the years when other towns were being equipped with them, and is still dependant for its water-supply on unprotected wells. It is understood that the water-works for Dhubri have been completed. The filtered water-supplies in the municipalities of Gauhati, Tezpur and Jorhat were maintained in order throughout the year, samples of water from these water-works being regularly analysed bacteriologically. Two bazars in the Gauhati Municipality were improved at a cost of Rs. 1,558. Eighteen dealers of food-supplies in Gauhati were prosecuted and fined for selling adulterated food articles, the articles being destroyed. A segregation shed for cholera was provided in Barpeta municipality.

Hill Districts.—Khasi Hills.

Shillong.—The weekly bacteriological analyses of the Shillong pipe water-supply indicate that a high standard of purity was maintained, but the quantity is unequal to meet the growing demands of the station and to meet this want the water of another spring is being impounded. Another minor sanitary improvement was the provision of a length of *pucca* surface drain at a cost of Rs. 3,397. In rural areas of the hills some minor improvements were effected in the springs that supply the village of Maoplang.

In the Lushai Hills, the catchment area of the main reservoir of the water-works at Aijal was extended, and work on the improvement of the water-supply in Lungleh is in progress.

A total expenditure of Rs. 27,127 is reported to have been incurred by the Public Works Department in 1921 on the improvement of water-supply and on other minor sanitary works, as compared with Rs. 23,800 expended on the same purpose in the previous year.

SECTION X.

GENERAL REMARKS.

32. *Village sanitation.*—A total expenditure of Rs. 1,80,267 of which the Government contribution was Rs. 1,46,102, was incurred by Local Boards mainly towards the improvement of water-supplies. As in the previous year the Dhubri Local Board heads the list with a total expenditure of Rs. 27,452 followed by Nowgong Local Board with an expenditure of Rs. 25,370 and Barpeta Local Board with an expenditure of Rs. 20,187. The expenditure appears to have been distributed as follows:—Silchar Local Board spent Rs. 3,980 on new tanks and Rs. 928 on the supply of pumps and five Local Boards in Sylhet spent an aggregate amount of Rs. 32,536 on new tanks. Dhubri

Local Board spent Rs. 24,950 on new wells, Goalpara Rs. 5,437 on 12 new wells, Gauhati Rs. 2,917 on 3 new tanks, Rs. 216 on one new well and Rs. 612 on temporary wells, Barpeta Rs. 8,043 on 11 new tanks, Rs. 1,039 on 6 new wells and Rs. 6,969 on gangways and woven wire fence in protection of 5 tanks, Tezpur Rs. 6,526 on 8 new wells and Rs. 294 in protection of two tanks, Mangaldai Rs. 2,642 on 3 new tanks, Rs. 1,405 on four wells and Rs. 891 on protection of 2 tanks, Nowgong Rs. 23,098 on new wells, Jorhat Rs. 6,104 on new tanks, Sibsagar Rs. 8,052 on new tanks and Golaghat Rs. 8,093 on new tanks and repair of old tanks, North Lakhimpur Rs. 1,045 on 4 new wells and platforms to wells and Dibrugarh Rs. 1,781 on 7 new wells and Rs. 230 on platforms to wells. The Hailakandi Local Board spent Rs. 650 on new tanks.

A Sanitary Inspector, whom we now style 'Health Officer,' has been posted to each of the municipal towns of Habiganj, Sunamganj, Karimganj and Sibsagar during the year, and four Rural Health Officers of the Sub-Assistant Surgeon class with a practical training in public health gained under the Executive Health Officer of the Bombay Municipality in a class affiliated to the Royal Sanitary Institute, London, were posted to the Local Boards of Gauhati, Dibrugarh, North Sylhet and Habiganj for the furtherance of public health measures, under the jurisdiction of the Local Board. Instructions for their guidance have recently been issued, but it does not appear that much effective use has, as yet, been made of their services by the Local Boards concerned, and it is too soon to offer any optimistic forecast as to improvements in rural sanitation which may be expected from these appointments. It is sufficient for the present to record the beginnings of an organisation whose eventual expansion may make it possible to deal more efficiently with outbreaks of epidemic disease in rural areas, particularly cholera, for the prevention of which in the absence of any such organisation we can at present do nothing effective. For these reasons, one ventures to hope that when the present financial stringency disappears it will be found possible to provide every Local Board in the plains districts with a Health Officer, through whose advice and instrumentality they may be enabled to work out their own salvation in matters pertaining to the public health.

33. A total of 12,612 parcels of quinine treatments was sold during the year through the agency of postmasters, selected school-masters, Sale of quinine. selected shop-keepers and members of the Vaccination staff as compared with 13,690 parcels sold in the previous year. The annexed statement shows the sales by districts :—

Districts.	Treatment parcels sold in		Difference.	
	1921.	1920.	Increase.	Decrease.
1	2	3	4	5
Cachar	697	707	.....	10
Sylhet	4,257	4,461	.....	204
Goalpara	1,480	1,770	.....	290
Kamrup	928	1,130	.....	202
Darrang	511	483	28	.....
Nowgong	609	800	.....	191
Sibsagar	572	619	.....	47
Lakhimpur	254	239	15	.....
Khasi and Jaintia Hills	933	1,157	.....	224
Naga Hills	123	248	.....	125
Lushai Hills	2,061	1,973	88	.....
Garo Hills	54	37	17	.....
Manipur	133	61	72	.....
Sadiya Frontier Tract	4	5	.....	1
Total	12,616	13,690	220	1,294
Net decrease ... ..	.....	.....	.....	1,074

The decrease in the sales may be inferred to indicate a lessened demand and that again would seem to show that the febrile diseases, malaria, influenza and the like for the treatment of which quinine is commonly employed, have been less than in the previous year, but in point of fact, the strike on the Assam-Bengal Railway and attendant transport difficulties played some part in lessening consumption.

34. The Civil Surgeon, Cachar, reports as follows in regard to the only *mela* of any importance which is held within the Province.

Pilgrim Traffic.

"The only fair which took place during the year under report was the Sidheswari Mela a Hindu festival. About 10,000 people assembled there and the "Mela" lasted for a period of ten days with effect from 4th April 1921. Houses were made for the accommodation of shop-keepers. Drains and latrines were constructed and sweepers were employed to make them neat and clean. Confectioners were made to curtain their sweet and lime was scattered in places. The Sub-Assistant Surgeon in charge of Katigora dispensary paid daily visits to the *mela* to see if there was anything wrong. There was an outbreak of cholera and 5 men died. Necessary steps were taken to prevent the spread of the disease."

35. During the year the Assam-Bengal Railway had a coolie camp for the manufacture of bricks, in which on an average 200 persons were employed. The site was kept clean of jungle and arrangements for the disposal of night soil by trenching and the provision of a reserve tank for drinking water-supply were made, with the result that no epidemic occurred and the health of the labourers was good.

Railway Coolie camps.

36. The total amount of work done in the laboratory during the year was 1,021 against 1,130, in the previous year. The deficiency is mainly due to a falling off in the number of samples of mustard oil, sent for analysis of which there were only 94, as against 22 in 1920 as the vigorous steps taken against vendors of adulterated oil in 1920, probably made them more careful in the selection of their materials. During the year, traces of Hydrocyanic acid were detected in 85 samples of mustard oil.

Public Health Laboratory.

The monthly bacteriological examination of filtered water from the water-works of the province and half-yearly chemical examination of the jail waters of the province were continued, and the Shillong tap-water was examined weekly. It maintained its high standard of purity throughout the year.

List of works done in the Public Health Bacteriological and Chemical Laboratory, Assam, in 1921 :—

	1921.	1920.
1	2	3
Chemical analysis of water	168	165
Chemical examination of <i>ghee</i> and fats	7	32
Chemical examination of milk	263	90
Chemical examination of mustard oil	94	252
Chemical examination of other food stuffs ... ..	...	8
Bacteriological examination of water	245	231
Bacteriological examination of vaccine lymph	214	268
Examination of mosquitoes	5	33
Bacteriological examination of milk	19	36
Miscellaneous	6	4
Special bacteriological examination of vaccine lymph ... ..	...	11
	1,021	1,130

Much of the clinical material which formerly was analysed in this laboratory is now examined in the Research Laboratories of the Pasteur Institute and this accounts for some reduction in the volume of work as compared with previous years but invaluable work has been done in constructing, fitting out, and despatching equipment sets for the Sub-Assistant Surgeons on *kala-azar* duty, and in the supply of syringes, needles and other special equipment, to replace breakages. The officer in charge of the Laboratory has also been in charge of the Vaccine Section of the Pasteur Institute, under the control of the Director, Pasteur Institute.

37. The management of Gauhati Coolie Depôt was handed over to the Tea Districts Labour Association during the year, the results of the new arrangement seem to have been satisfactory and an extension of these arrangements to other similar depôts is under consideration. Owing to the light nature of the traffic, the absence of any prevalent epidemic, and the care with which all labourers are vaccinated against small-pox and inoculated against cholera before commencing their journey, the immigration traffic was uneventful, but an unusual feature of this department of work was the care of labour emigrants from the Chargola Valley at Karimganj during the exodus.

The number of immigrants to Assam by the different routes was as follows :—

<i>Via</i> Goalundo by steamer	...	...	...	4,441
<i>Via</i> Chandpur by rail to the Assam Valley	...	...	...	3,453
<i>Via</i> Chandpur by rail to Cachar and Sylhet	...	...	...	1,492
<i>Via</i> Naihati and Amingaon by rail	...	...	...	12,334
		Total	...	21,720

Owing to the depression in the tea industry the recruitment was below normal during the year. There were 23 admissions, (3 from cholera, 16 from influenza, 2 from small-pox and 7 from chicken-pox) from infectious diseases among emigrants admitted to the Goalundo hospital, with 1 death from cholera against 105 admissions with 13 deaths from influenza in 1920. Inoculation with anti-cholera vaccine and vaccination at recruitment depôt was continued with good results.

Emigration traffic ceased altogether by the Goalundo route from the end of May till about the middle of July owing to a strike of the employees of the Steamer Companies.

38. Major J. Taylor, D.S.O., I.M.S., held charge of the department up to 4th July, Captain S. R. Rao, Assistant Director of Public Health, from 5th July to 21st August and myself from 22nd August to the end of the year.

In January and February, Major Taylor, inspected Tezpur, Nowgong, Jorhat, Sibsagar and Golaghat Municipalities, Mangaldai and Nazira Unions and the *kala-azar* treatment arrangements in the districts of Darrang, Nowgong and Sibsagar. He visited Lokra to examine a site at Charduar proposed for a civil station in the Bali-para Frontier Tract, and paid a visit to Gatonga Tea Estate in the Sibsagar district. In March, he inspected Sylhet, Habiganj, Karimganj and Silchar Municipalities and Maulvi Bazar Union and the *kala-azar* operations in Sylhet investigating the causes of the prevalence of small-pox in that district. In April, he inspected the Dibrugarh Municipality and paid a visit to Sadiya. In May, he inspected the *kala-azar* operations in Doria and Hautley Tea Estates. In June, he inspected the Gauhati Municipality and supervised the *kala-azar* operations in the Kamrup district.

In July and August, Captain Rao, inspected Barpeta Municipality and Tinsukia Union, visited Karimganj to supervise arrangements for giving relief to the sick, infirm and destitute coolies during the tea-garden coolie exodus and inspected *kala-azar* work in Kamrup and Sylhet districts.

In November and December, I visited Messrs. Bird and Co's Sugarcane Factory at Nalbari in connection with the *anti-malaria* operations in progress there, and thereafter, until the end of the year, I was engaged in a tour of inspection of the *kala-azar* treatment operations in rural areas in the districts of Kamrup, Goalpara and Nowgong, in the course of which the municipalities of Gauhati, Goalpara and Nowgong were inspected.

T. C. McCOMBIE YOUNG, *Lieut.-Colonel, I.M.S.,*

SHILLONG,

Director of Public Health, Assam,

The 8th May 1922.

SECTION XI.

REPORT OF THE SANITARY BOARD.

39. The following Annual Report has been supplied by the Secretary :—
1. The constitution of the Sanitary Board was the same as in the previous year.
 2. Two meetings were held during the year, all other business being transacted by the circulation of files and notes.
 3. The following detailed estimate has been sanctioned by Government :—
Second revised estimate for remodelling Dhubri water-works at an estimated cost of Rs. 1,63,555.
 4. The following rough estimate was considered and recommended for sanction and has since been sanctioned by Government :—
Augmenting the water-supply of the Shillong Municipality at an estimated cost of Rs. 8,866.
 5. The only other subjects of importance brought before the Board on which advice has been offered to Government and Municipalities are :—
 - (a) Prevention of waste in the Shillong water-works.
 - (b) Sources of supply for future extensions to Shillong water-works.
 - (c) Sylhet drainage.
 - (d) Removal of iron from the water of the Haflong water-works.

A. T. DUGUID,
Secretary.

J. GARVIE,
President.

IMPERIAL STATEMENT No. I.—*Statement showing the births*

Number.	Districts.			Population according to the Census of 1921.			Number of births registered.		
				Male.	Female.	Total.	Male.	Female.	Total.
1	2			3	4	5	6	7	8
	SURMA VALLEY.								
1	Cachar	...	...	261,594	238,890	500,484	8,138	7,694	15,832
2	Sylhet	...	...	1,308,734	1,232,607	2,541,341	42,592	39,505	82,097
	Total	...	...	1,570,328	1,471,497	3,041,825	50,730	47,199	97,929
	ASSAM VALLEY.								
3	Goalpara	...	...	406,628	355,895	762,523	13,203	12,405	25,608
4	Kamrup	...	...	397,267	365,404	762,671	11,317	9,704	21,021
5	Darrang	...	...	253,136	224,799	477,935	6,858	6,663	13,521
	Nowgong	...	...	208,685	189,236	397,921	5,281	4,928	10,209
7	Sibsagar	...	...	433,913	389,284	823,197	10,731	9,916	20,647
8	Lakhimpur	...	...	313,723	274,572	588,295	7,275	6,943	14,218
	Total	...	...	2,013,352	1,799,190	3,812,542	54,665	50,559	105,224
	Total for the Province	...	...	3,583,680	3,270,687	6,854,367	105,395	97,758	203,153

IMPERIAL STATEMENT No. II.—*Statement showing the births and deaths*

Number.	Districts.	Area, in square miles.	Average population per square mile.	Population (Census of 1921).			Births.		Number of deaths registered.		
				Male.	Female.	Total.	Total number.	Births per 1,000 of population.	Male.	Female.	Total.
1	2	3	4	5	6	7	8	9	10	11	12
	SURMA VALLEY.										
1	Cachar	1,859	269	261,594	238,890	500,484	15,832	31·63	8,110	7,688	15,798
2	Sylhet	5,388	471	1,308,734	1,232,607	2,541,341	82,097	32·30	37,537	32,558	70,095
	Total	7,247	419	1,570,328	1,471,497	3,041,825	97,929	32·19	45,647	40,246	85,893
	ASSAM VALLEY.										
3	Goalpara	3,954	193	406,628	355,895	762,523	25,608	33·58	14,512	11,435	25,947
4	Kamrup	3,858	197	397,267	365,404	762,671	21,021	27·56	9,457	7,604	17,061
5	Darrang	3,418	139	253,136	224,799	477,935	13,521	28·29	6,707	6,576	13,283
6	Nowgong	3,843	103	208,685	189,236	397,921	10,209	25·65	4,913	4,476	9,389
7	Sibsagar	4,996	164	433,913	389,284	823,197	20,647	25·08	8,544	7,986	16,530
8	Lakhimpur	4,529	129	313,723	274,572	588,295	14,218	24·16	6,908	6,502	13,410
	Total	24,598	155	2,013,352	1,799,190	3,812,542	105,224	27·59	51,041	44,579	95,620
	Total for the Province	31,845	215	3,583,680	3,270,687	6,854,367	203,153	29·63	96,688	84,825	181,513

registered in the districts of Assam during the year 1921.

Ratio of births per 1,000 of population.			Number of males born to every 100 females born.	Excess of births over deaths per 1,000 of population.	Excess of deaths over births per 1,000 of population.	Mean ratio of births per 1,000 during previous five years.		
Male.	Female.	Total.				Male.	Female.	Total.
9	10	11	12	13	14	15	16	17
16.26	15.37	31.63	105	.07	...	16.42	15.41	31.83
16.75	15.54	32.30	107	4.72	...	15.31	14.26	29.57
16.67	15.51	32.19	107	3.96	...	15.48	14.45	29.94
17.31	16.26	33.58	106	...	.44	20.93	19.85	40.78
14.83	12.72	27.56	116	5.19	...	16.52	15.36	31.88
14.34	13.94	28.29	103	.50	...	18.29	17.98	36.37
13.27	12.38	25.65	107	2.06	...	17.28	16.44	33.72
13.03	12.04	25.08	108	5.00	...	15.57	14.46	30.04
12.36	11.80	24.16	105	1.37	...	14.96	14.35	29.32
14.33	13.26	27.59	108	2.51	...	17.22	16.30	33.53
15.37	14.26	29.63	107	3.15	...	16.33	15.40	31.78

registered in the districts of Assam during the year 1921.

Number of deaths of males to every 100 deaths of females.	Deaths per 1,000 of population from—											Mean ratio of deaths per 1,000 during the previous five years.		
	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and Diarrhoea.	Respiratory diseases.	Injuries.	All other causes.	All causes.			Male.	Female.	Total.
									Male.	Female.	Total.			
13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
105	2.92	.03	...	17.24	1.93	2.68	.24	6.53	31.00	32.18	31.56	34.52	35.43	34.95
115	2.34	.29	...	15.27	1.52	.89	.32	6.92	28.68	26.41	27.58	35.61	32.58	34.13
113	2.43	.25	...	15.59	1.58	1.18	.31	6.86	29.06	27.35	28.23	35.44	33.02	34.27
127	3.68	.48	...	27.96	.33	.49	.32	.74	35.68	32.13	34.02	42.29	38.98	40.73
124	1.64	.27	...	14.49	1.00	.72	.20	4.02	23.80	20.80	22.37	34.09	31.67	32.90
102	.65	2.38	...	14.94	2.63	1.40	.27	5.48	26.49	29.25	27.79	45.46	47.26	46.31
103	1.54	.40	...	17.19	.82	.51	.24	2.87	23.54	23.65	23.59	37.09	34.72	35.92
107	.34	.10	...	10.52	2.66	2.12	.18	4.12	19.69	20.51	20.03	35.05	36.24	35.61
106	.22	.07	...	8.75	3.23	4.45	.33	5.71	22.01	23.68	22.73	39.44	40.08	39.74
114	1.41	.52	...	15.78	1.76	1.61	.25	3.71	25.35	24.77	25.08	38.41	37.49	37.97
114	1.87	.40	...	15.70	1.68	1.42	.28	5.11	26.98	25.93	26.48	36.97	35.30	36.17

IMPERIAL STATEMENT No. III.—Deaths registered in the

No.	Districts.				January.	February.	March.	April.	May.
1	2				3	4	5	6	7
	SURMA VALLEY.								
1	Cachar	...	...	...	956	806	1,029	1,626	2,587
2	Sylhet	...	...	...	6,079	4,820	4,813	5,355	6,798
	Total	...	...	...	7,035	5,626	5,842	6,981	9,385
	ASSAM VALLEY.								
3	Goalpara	...	...	...	1,892	1,609	2,005	2,294	2,562
4	Kamrup	...	...	...	1,441	1,707	1,498	1,547	1,587
5	Darrang	...	...	...	1,077	784	1,241	1,177	1,422
6	Nowgong	...	...	...	719	590	711	693	797
7	Sibsagar	...	...	...	1,187	1,352	1,506	1,360	1,548
8	Lakhimpur	...	...	...	1,097	957	1,245	1,004	901
	Total	...	...	...	7,413	6,999	8,206	8,075	8,817
	Total for the Province	...	...	...	14,448	12,625	14,048	15,056	18,202
	Ratio per 1,000	...	...	...	2.10	1.84	2.04	2.19	2.65

IMPERIAL STATEMENT No. IV.—Deaths registered according to

Under 1 year.													1 and under 5.		
No.	Districts.	Not exceeding 1 month.			Over 1 month and not exceeding 6 months.			Over 6 months and not exceeding 12 months.			Total of male columns 3, 6 and 9.	Total of female columns 4, 7 and 10.	Total.	Male.	Female.
		Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	SURMA VALLEY.														
1	Cachar ...	686	588	1,274	482	417	899	295	291	586	1,463	1,296	2,759	1,020	1,035
2	Sylhet ...	5,509	4,019	9,528	2,489	1,831	4,320	1,115	915	2,030	9,113	6,765	15,878	4,253	4,070
	Total	6,195	4,607	10,802	2,971	2,248	5,219	1,410	1,206	2,616	10,576	8,061	18,637	5,273	5,105
	ASSAM VALLEY.														
3	Goalpara	1,830	1,244	3,074	1,342	1,016	2,358	401	361	762	3,573	2,621	6,194	1,857	1,653
4	Kamrup	767	621	1,388	426	421	847	501	395	896	1,694	1,437	3,131	1,042	884
5	Darrang	608	619	1,227	700	600	1,300	246	255	501	1,554	1,474	3,028	916	960
6	Nowgong	574	445	1,019	403	359	762	187	202	389	1,164	1,006	2,170	707	717
7	Sibsagar	684	504	1,248	578	512	1,090	333	261	594	1,595	1,337	2,932	1,214	1,123
8	Lakhimpur	355	314	669	323	299	622	340	315	655	1,018	928	1,946	916	903
	Total	4,818	3,807	8,625	3,772	3,207	6,979	2,008	1,789	3,797	10,598	8,803	19,401	6,652	6,240
	Total for the Province.	11,013	8,414	19,427	6,743	5,455	12,198	3,418	2,995	6,413	21,174	16,864	38,038	11,925	11,345
	Population (according to the census of 1921.)	...	...	...	...	...	...	...	...	...	101,902	99,891	201,793	359,648	377,003
	Ratio per 1,000	...	...	...	...	...	...	...	...	...	207.78	168.82	188.50	33.15	30.09

districts of Assam during each month of the year 1921.

June.	July.	August.	September.	October.	November.	December.	Total.
8	9	10	11	12	13	14	15
1,970	1,160	1,137	895	1,027	1,324	1,281	15,798
5,166	4,877	4,336	5,062	6,603	8,261	7,925	70,095
7,136	6,037	5,473	5,957	7,630	9,585	9,206	85,893
2,291	1,570	1,879	2,078	2,894	2,798	2,075	25,947
1,607	1,433	1,282	1,244	1,773	1,159	783	17,061
1,563	1,142	1,142	1,019	1,092	776	848	13,283
799	902	888	777	728	912	873	9,389
1,605	1,600	1,438	1,070	1,206	1,283	1,375	16,530
1,014	1,140	1,203	1,197	1,306	1,313	1,033	13,410
8,879	7,787	7,832	7,385	8,999	8,241	6,987	95,620
16,015	13,824	13,305	13,342	16,629	17,826	16,193	181,513
2.33	2.01	1.94	1.94	2.42	2.60	2.36	26.48

age in the districts of Assam during the year 1921.

5 and under 10.		10 and under 15.		15 and under 20.		20 and under 30.		30 and under 40.		40 and under 50.		50 and under 60.		60 and upwards.	
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
726	662	392	308	330	454	771	1,110	1,036	965	833	555	568	436	971	867
2,977	2,461	1,779	1,292	1,623	1,882	3,659	4,967	3,872	3,607	3,323	2,248	2,706	1,935	4,232	3,331
3,703	3,123	2,171	1,609	1,953	2,336	4,430	6,077	4,903	4,572	4,156	2,803	3,274	2,371	5,203	4,198
1,230	924	751	547	587	814	1,473	1,678	1,523	1,060	1,235	774	1,041	624	1,242	740
953	823	794	581	836	773	1,186	1,039	1,104	825	839	493	528	374	481	370
493	467	269	234	233	311	610	878	822	932	742	515	561	447	502	358
504	432	200	190	250	256	452	570	430	430	383	316	370	261	363	298
641	669	403	392	346	450	677	1,142	1,091	1,191	969	665	832	511	771	506
501	526	306	300	224	328	740	990	1,102	1,189	939	544	666	406	496	373
4,322	3,846	2,818	2,244	2,481	2,942	5,138	6,297	6,072	5,627	5,107	3,307	3,998	2,623	3,855	2,650
8,025	6,969	4,989	3,844	4,434	5,278	9,568	12,374	10,980	10,199	9,263	6,110	7,272	4,994	9,058	6,848
580,966	568,880	433,305	342,744	278,664	292,075	577,151	613,934	556,071	448,620	359,844	259,435	198,849	149,979	137,280	118,126
13.81	12.25	11.51	11.21	15.91	18.07	16.73	20.15	19.74	22.73	25.74	23.55	36.57	33.29	65.98	57.97

IMPERIAL STATEMENT No. V.—Deaths registered according

Number.	Districts.	Population according								
		Christians.			Hindus.			Muhammadans.		
		Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
1	2	3	4	5	6	7	8	9	10	11
	SURMA VALLEY.									
1	Cachar ...	842	768	1,610	166,782	152,463	319,245	89,513	81,109	170,622
2	Sylhet...	970	786	1,756	565,443	534,302	1,099,745	738,916	694,474	1,433,390
	Total ...	1,812	1,554	3,366	732,225	686,765	1,418,990	828,429	775,583	1,604,012
	ASSAM VALLEY.									
3	Goalpara ...	5,434	4,878	10,312	198,904	170,488	369,392	167,765	148,725	316,490
4	Kamrup ...	1,926	1,735	3,661	283,554	261,085	544,639	59,986	51,560	111,546
5	Darrang ...	2,816	2,502	5,318	179,559	158,663	338,222	20,137	16,398	36,535
6	Nowgong ...	1,465	1,460	2,925	116,818	105,195	222,013	38,655	31,927	70,582
7	Sibsagar ...	4,557	3,823	8,380	365,885	329,131	695,016	19,370	15,624	34,994
8	Lakhimpur ...	4,216	3,515	7,731	245,732	215,121	460,853	9,485	5,961	15,446
	Total ...	20,414	17,913	38,327	1,390,452	1,239,683	2,630,135	315,398	270,195	585,593
	Total for the Province ...	22,226	19,467	41,693	2,122,677	1,926,448	4,049,125	1,143,827	1,045,778	2,189,605

IMPERIAL STATEMENT No. V.—Deaths registered according

Number.	Districts.	Number of deaths registered—concl'd.								
		Buddhists.			Other classes.			Total.		
		Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
		30	31	32	33	34	35	36	37	38
	SURMA VALLEY.									
1	Cachar ...	1	...	1	404	354	758	8,110	7,688	15,798
2	Sylhet...	3	4	7	502	390	892	37,537	32,558	70,095
	Total ...	4	4	8	906	744	1,650	45,647	40,246	85,893
	ASSAM VALLEY.									
3	Goalpara ...	22	15	37	2,730	1,857	4,587	14,512	11,435	25,947
4	Kamrup ...	...	1	1	2,079	1,509	3,588	9,457	7,604	17,061
5	Darrang ...	3	4	7	2,415	2,296	4,711	6,707	6,576	13,283
6	Nowgong ...	7	4	11	1,395	1,256	2,651	4,913	4,476	9,389
7	Sibsagar ...	26	32	58	1,332	1,281	2,613	8,544	7,986	16,530
8	Lakhimpur ...	42	23	65	1,063	1,159	2,222	6,908	6,502	13,410
	Total...	100	79	179	11,014	9,353	20,372	51,041	44,579	95,620
	Total for the Province	104	83	187	11,920	10,102	22,022	96,688	84,825	181,513

to class in the districts of Assam during the year 1921.

to the Census of 1921.									Number of deaths registered.								
Buddhists.			Other classes.			Total.			Christians.			Hindus.			Muhammadans.		
M.	F.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
5	2	7	4,452	4,548	9,000	261,594	238,890	500,484	11	14	25	4,822	4,544	9,366	2,872	2,776	5,648
34	9	43	3,371	3,036	6,407	1,308,734	1,232,607	2,541,341	6	9	15	16,083	14,092	30,175	20,943	18,063	39,006
39	11	50	7,823	7,584	15,407	1,570,328	1,471,497	3,041,825	17	23	40	20,905	18,636	39,541	23,815	20,839	44,654
547	375	922	33,978	31,429	65,407	406,628	355,895	762,523	169	167	336	6,584	5,391	11,975	5,007	4,005	9,012
286	133	419	51,515	50,891	102,406	337,267	365,404	702,671	14	11	25	6,430	5,376	11,806	934	707	1,641
466	244	710	50,158	46,992	97,150	253,136	224,799	477,935	53	54	107	3,756	3,817	7,573	480	405	885
24	6	30	51,723	50,648	102,371	208,685	189,236	397,921	23	11	34	2,919	2,745	5,664	569	460	1,029
1,389	1,055	2,444	42,712	39,651	82,363	433,913	389,284	823,197	58	48	106	6,908	6,389	13,297	220	236	456
2,516	2,110	4,626	51,774	47,865	99,639	313,723	274,572	588,295	50	35	85	5,598	5,179	10,777	155	106	261
5,228	3,923	9,151	231,860	267,476	549,336	2,013,352	1,799,190	3,812,542	367	326	693	32,195	28,897	61,092	7,365	5,919	13,284
5,267	3,934	9,201	289,683	275,060	564,743	3,583,680	3,270,687	6,854,367	384	349	733	53,100	47,533	100,633	31,180	26,758	57,938

to class in the districts of Assam during the year 1921—concl'd.

Ratio of deaths per 1,000 of population.																	
Christians.			Hindus.			Muhammadans.			Buddhists.			Other classes.			Total.		
Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
13.06	18.22	15.52	28.91	29.88	29.33	32.03	33.60	33.10	200.01	...	142.85	90.74	77.83	84.22	31.00	32.18	31.56
6.18	11.45	8.54	28.44	26.37	27.43	28.34	26.00	27.21	88.23	444.44	162.79	148.91	128.45	139.22	23.68	26.41	27.58
9.38	14.80	11.88	28.55	27.13	27.86	28.74	26.87	27.83	102.56	363.63	160.00	115.81	98.10	107.08	29.06	27.35	28.23
31.10	34.23	32.58	33.10	31.62	32.41	29.84	26.92	28.47	40.22	40.0	40.13	80.34	59.08	70.13	35.68	32.13	34.02
7.26	6.34	6.82	22.67	20.59	21.67	15.57	13.71	14.71	...	7.51	2.38	40.35	29.65	35.03	23.80	20.80	22.37
18.82	21.58	20.12	20.91	24.05	22.39	23.83	24.69	24.22	6.43	16.39	9.85	48.14	48.85	48.49	26.49	29.25	27.79
15.69	7.53	11.62	24.98	26.09	25.51	14.72	14.40	14.57	291.66	666.66	366.66	26.97	24.79	25.89	23.54	23.65	23.59
12.72	12.55	12.64	19.12	19.41	19.13	11.35	15.10	13.03	18.71	30.33	23.73	31.18	32.30	31.72	19.69	20.51	20.03
11.85	9.95	10.99	22.78	24.07	23.38	16.35	17.78	16.89	16.69	10.90	14.05	20.53	24.21	22.30	22.10	23.68	22.79
17.97	18.19	18.08	23.15	23.31	23.22	23.35	21.90	22.68	19.12	20.13	19.56	39.07	34.98	37.03	25.25	24.78	25.08
17.27	17.92	17.58	25.01	24.67	24.85	27.25	25.58	26.46	19.74	21.09	20.32	41.14	33.72	38.99	26.98	25.93	26.48

IMPERIAL STATEMENT No. VI.—Deaths registered from different

1	2	3	4			5	6	7	8	9	10	
Number.	Districts and towns.	Population according to Census of 1921.	Births.			Birth rate.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.
			Male.	Female.	Total.							
	DISTRICTS EXCLUDING TOWNS.											
	SURMA VALLEY.											
1	Cachar	488,052	8,011	7,546	15,557	31·87	1,450	2	...	8,580	929	1,317
2	Sylhet	2,505,744	42,120	39,047	81,167	32·39	5,885	759	...	38,617	3,726	2,169
	Total	2,993,796	50,131	46,593	96,724	32·30	7,335	761	...	47,197	4,655	3,486
	ASSAM VALLEY.											
3	Goalpara	745,293	12,982	12,182	25,164	33·76	2,730	370	...	21,153	215	290
4	Kamrup	734,461	10,836	9,252	20,088	27·35	1,241	209	...	10,867	644	410
5	Darrang	469,571	6,749	6,572	13,321	28·36	311	1,141	...	7,102	1,249	658
6	Nowgong	391,036	5,170	4,833	10,003	25·58	602	162	...	6,787	298	174
7	Sibsagar	804,955	10,500	9,696	20,196	25·08	280	86	...	8,488	2,150	1,710
8	Lakhimpur	569,160	7,069	6,767	13,836	24·30	133	42	...	5,077	1,774	2,485
	Total	3,714,476	53,306	49,302	102,608	27·62	5,297	2,010	...	59,474	6,330	5,727
	Total for districts, excluding towns.	6,708,272	103,437	95,895	199,332	29·71	12,632	2,771	...	106,671	10,985	9,213
	TOWNS.											
	SURMA VALLEY.											
1	Silchar	10,204	106	123	229	22·44	14	...	...	40	30	26
2	Hailakandi	2,228	21	25	46	20·64	...	...	...	9	9	...
3	Sylhet	16,912	232	223	455	26·90	10	...	...	44	64	75
4	Karimganj	4,552	44	45	89	19·55	24	...	...	22	16	8
5	Maulvi Bazar	3,334	38	37	75	22·49	...	...	...	25	...	2
6	Habiganj	5,918	103	88	191	32·27	33	...	...	71	44	...
7	Sunamganj	4,881	55	65	120	24·58	4	1	...	42	14	10
	Total	48,029	599	606	1,205	25·03	85	1	...	253	177	121

causes in the districts and towns of the province of Assam during the year 1921.

11						12	13	14											15
Injuries.						All other causes.	Total.	Ratio of deaths per 1,000 of population.											Number.
Suicide.		Wounds or accidents.	Snakes and wild animals.	Rabies.	Total.			Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	All other causes.	From all causes.			
Male.	Female.															For the year.	Mean of previous five years.		
4	5	87	10	9	115	3,200	15,593	2·97	·004	...	17·57	1·90	2·69	·23	6·55	31·94	35·25	1	
29	31	657	87	3	807	17,284	69,247	2·35	·32	...	15·41	1·48	·86	·32	6·89	27·63	34·24	2	
33	36	744	97	12	922	20,484	84,840	2·45	·25	...	15·76	1·55	1·16	·31	6·84	28·34	34·40		
17	9	132	66	8	232	423	25,413	3·66	·49	...	28·38	·28	·38	·31	·56	34·09	40·86	3	
12	17	72	36	5	142	2,832	16,345	1·68	·28	...	14·79	·87	·55	·19	3·85	22·25	32·85	4	
12	8	69	36	6	131	2,580	13,172	·66	2·43	...	15·12	2·66	1·40	·27	5·49	28·05	46·61	5	
11	7	29	31	13	91	1,081	9,195	1·54	·41	...	17·35	·76	·44	·23	2·76	23·51	35·97	6	
28	11	85	22	4	150	3,317	16,181	·34	·10	...	10·54	2·67	2·12	·18	4·12	20·10	35·91	7	
25	18	107	24	9	183	3,188	12,882	·23	·07	...	8·92	3·11	4·36	·32	5·60	22·63	40·27	8	
105	70	494	215	45	929	13,421	93,188	1·42	·54	...	16·01	1·70	1·54	·25	3·61	25·08	38·17		
138	106	1,238	312	57	1,851	33,905	178,028	1·88	·41	...	15·90	1·63	1·37	·27	5·05	26·53	36·33		
...	...	4	...	...	4	48	162	1·37	...	...	3·92	2·94	2·54	·39	4·70	15·87	21·40	1
...	...	1	1	...	2	23	43	...	...	...	4·03	4·03	...	·89	10·32	19·29	24·62	2
...	...	6	1	...	7	156	356	·59	...	...	2·60	3·78	4·43	·41	9·22	21·05	28·15	3
...	...	3	...	...	3	40	113	5·27	...	...	4·83	3·51	1·75	·65	8·78	24·82	23·59	4
...	...	...	...	...	...	5	32	...	...	...	7·49	...	·59	...	1·49	9·59	24·48	5
1	...	4	...	...	5	76	229	5·57	...	...	11·99	7·43	...	·84	12·84	38·69	21·94	6
...	...	2	...	...	2	45	118	·81	·20	...	8·60	2·86	2·06	·40	9·21	24·17	26·40	7
1	...	20	2	...	23	393	1,053	1·77	·02	...	5·26	3·68	2·51	·47	8·18	21·92	24·88		

1	2	3	4			5	6	7	8	9	10	
Number.	Districts and towns.	Population according to Census of 1921.	Births.			Birth-rate.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.
			Male.	Female.	Total.							
8	TOWNS—conold. ASSAM VALLEY. Dhubri	6,707	106	107	213	31·75	31	...	...	43	21	31
9	Gauripur	4,311	22	18	40	9·27	32	...	...	28	2	2
10	Goalpara	6,212	93	98	191	30·74	19	...	...	97	16	52
11	Gauhati	16,480	202	197	399	24·21	13	1	..	101	89	87
12	Barpeta	11,730	279	255	534	45·52	...	...	...	84	37	59
13	Tezpur	7,341	101	85	186	25·33	...	...	...	36	7	14
14	Mangaldai	1,023	8	6	14	13·68	...	...	...	4	4	1
15	Nowgong	6,885	111	95	206	29·92	13	...	...	54	30	32
16	Sibsagar	5,329	68	67	135	25·33	...	...	...	42	4	9
17	Nazira	2,632	23	28	51	19·37	...	...	...	23	2	...
18	Jorhat	6,626	94	74	168	25·35	1	...	...	47	30	23
19	Golaghat	3,655	46	51	97	26·54	1	1	...	67	8	4
20	Dibrugarh	16,007	178	145	323	20·17	2	...	...	37	124	112
21	Doom Dooma	1,162	5	14	19	16·35	...	...	...	16	5	15
22	North Lakhimpur	1,966	23	17	40	20·34	...	...	...	23	1	8
	Total	98,066	1,359	1,257	2,616	26·67	112	2	...	702	380	449
	Total of towns	146,095	1,958	1,863	3,821	26·15	197	3	...	955	557	570
	Total for the Province	6,854,367	105,395	97,758	203,153	29·63	12,829	2,774	...	107,626	11,542	9,783

Supplementary (optional) Statement

[illegible]

in the districts and towns of Assam during the year 1921—concluded.

11						12	13	14										15
Injuries.						All other causes.	Total.	Ratio of deaths per 1,000 of population.										Number.
Suicide.		Wounds or accidents.	Snakes and wild animals.	Rabies.	Total.			Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	All other causes.	From all causes.		
Male.	Female.															For the year.	Mean of previous five years.	
...	...	9	...	...	9	97	232	4.62	...	...	6.41	3.13	4.62	1.34	14.46	34.59	38.39	8
...	...	...	1	...	1	9	74	7.42	...	...	6.49	.46	.46	.23	2.08	17.16	Not avail- able.	9
1	...	2	1	...	4	40	228	3.05	15.61	2.56	8.37	.64	6.43	36.70		30.51	10
...	...	6	...	...	6	143	440	.78	.06	...	6.12	5.40	5.27	.36	8.67	26.69	35.41	11
...	...	3	2	...	5	91	276	...	...	...	7.16	3.15	5.03	.42	7.75	23.52	33.05	12
...	...	1	...	...	1	41	99	...	...	...	4.90	.95	1.90	.13	5.58	13.48	23.71	13
...	...	1	...	...	1	2	12	...	...	...	3.91	3.91	.97	.97	1.95	11.73	62.69	14
...	...	4	...	...	4	61	194	1.88	...	...	7.84	4.35	4.64	.58	8.86	23.17	33.63	15
...	...	1	...	...	1	19	75	...	...	...	7.88	.75	1.68	.18	3.56	14.07	15.61	16
...	1	1	...	...	2	1	28	...	...	...	8.73	.76	...	.76	.38	10.63	22.06	17
...	...	2	...	...	2	60	163	.15	...	...	7.09	4.52	3.47	.30	9.05	24.60	24.27	18
...	...	...	...	...	...	2	83	.27	.27	...	18.33	2.18	1.09	...	.54	22.70	33.90	19
2	...	10	...	...	12	147	434	.12	...	...	2.31	7.74	6.99	.74	9.18	27.11	24.99	20
...	...	...	...	...	...	3	39	...	...	...	13.76	4.30	12.90	...	2.53	33.56	21.78	21
...	...	...	1	...	1	22	55	...	...	...	11.69	.50	4.06	.50	11.19	27.97	48.63	22
3	1	40	5	...	49	738	2,432	1.14	.02	...	7.15	3.87	4.57	.49	7.52	24.79	30.34	
4	1	60	7	...	72	1,131	3,485	1.34	.02	..	6.53	3.81	3.90	.49	7.74	23.85	28.47	
142	107	1,298	319	57	1,923	35,036	131,513	1.87	.40	...	15.70	1.68	1.42	.28	5.11	26.48	36.17	

VI (a) for the year 1921.

7		8		9		10		11		12		Deaths under one year.			Infant mortality rate.
Dysentery.		Diarrhoea.		Pneumonia.		Pthisis.		Other respiratory diseases.		Deaths from child-birth.					
Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.		Male.	Female.	Total.		
14	1·37	16	1·56	8	·78	2	·19	16	1·56	1	12	15	27	117·90	
35	2·06	29	1·71	10	·59	6	·35	59	3·48	10	40	27	67	147·25	
34	5·74	10	1·68	...	...	...	...	...	...	2	31	22	53	277·48
12	2·63	4	·87	1	·11	3	·65	4	·87	1	12	2	14	157·30	
13	2·66	1	·20	2	·40	..	...	8	1·63	1	18	18	36	300·00
80	4·85	9	·54	23	1·39	11	·66	53	3·21	7	29	19	48	120·30	
15	1·27	22	1·87	17	1·44	4	·34	38	3·23	7	32	32	64	119·85	
17	2·53	4	·59	5	·74	2	·29	24	3·57	1	20	14	34	150·62	
10	1·60	6	·96	37	5·95	5	·80	10	1·60	13	14	13	27	141·36	
2	·27	5	·68	8	1·08	1	·13	5	·68	1	21	8	29	155·91	
30	4·35	...	...	1	·14	1	·14	30	4·35	...	14	21	35	171·31
20	3·01	10	1·50	5	·75	3	·45	15	2·26	6	16	18	34	202·38	
4	·75	...	...	...	...	1	·18	8	1·50	1	15	8	23	170·37
110	6·87	14	·87	13	·81	6	·37	93	5·80	6	29	23	52	160·99	
12	·69	...	...	...	...	...	...	34	1·97	...	35	34	69	140·52

IMPERIAL STATEMENT No. VII.—Deaths registered from Cholera in the

Number.	Districts.	Circles of Registration.		Villages.		January.	February.	March.	April.	May.
		Number in each district.	Number from which deaths from cholera were reported.	Number in each district.	Number from which deaths from cholera were reported.					
1	2	3	4	5	6	7	8	9	10	11
	SURMA VALLEY.									
1	Cachar	8	6	1,103	362	...	6	23	206	761
2	Sylhet	23	21	10,781	1,160	55	125	313	758	1,318
	Total	31	27	11,884	1,542	55	131	336	964	2,079
	ASSAM VALLEY.									
3	Goalpara	21	19	2,137	329	...	1	...	4	32
4	Kamrup	15	13	1,954	72	2	13	13	25	21
5	Darrang	12	8	1,406	113	11	6	9	38	56
6	Nowgong	10	8	1,495	23*	...	1	1	6	10
7	Sibsagar	15	8	2,143	218	6	1	19	31	44
8	Lakhimpur	13	8	1,702	6	5	4	10	11	10
	Total	86	64	10,837	761	24	26	52	115	173
	Total for the Province	117	91	22,721	2,303	79	157	388	1,079	2,252

* Mauzas.

IMPERIAL STATEMENT No. VIII.—Deaths registered from

Number.	Districts.	Circles of Registration.		Villages.		January.	February.	March.	April.	May.	June.	July.
		Number in each district.	Number from which deaths from small-pox were reported.	Number in each district.	Number from which deaths from small-pox were reported.							
1	2	3	4	5	6	7	8	9	10	11	12	13
	SURMA VALLEY											
1	Cachar	8	2	1,103	1	1	...	...	...	...	...	...
2	Sylhet	23	14	10,781	367	153	117	160	98	91	57	37
	Total	31	16	11,884	368	154	117	160	98	91	57	37
	ASSAM VALLEY.											
3	Goalpara	21	12	2,137	88	3	30	75	35	36	35	34
4	Kamrup	15	7	1,954	12	1	9	26	14	9	14	50
5	Darrang	12	7	1,406	181	107	37	275	272	252	114	36
6	Nowgong	10	6	1,495	12*	3	...	2	2	9	1	25
7	Sibsagar	15	8	2,143	11	10	8	13	12	11	15	6
8	Lakhimpur	13	4	1,702	6	14	...	1	12	1	...	...
	Total	86	44	10,837	310	138	84	392	347	318	179	151
	Total for the Province	117	60	22,721	678	292	201	522	445	409	236	188

* Mauzas.

districts of Assam during each month of the year 1921.

June.	July.	August.	September.	October.	November.	December.	Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.	Number.
							Male.	Female.	Total.	Male.	Female.	Total.		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
276	11	40	9	6	25	101	819	645	1,464	3.12	2.69	2.92	2.33	1
362	146	97	148	566	1,007	1,031	3,259	2,697	5,956	2.49	2.18	2.34	2.34	2
638	157	137	157	572	1,032	1,162	4,078	3,342	7,420	2.59	2.27	2.43	2.35	
45	5	101	400	1,113	869	242	1,415	1,397	2,812	3.48	3.92	3.68	1.62	3
30	22	91	182	551	247	57	646	608	1,254	1.62	1.66	1.64	3.87	4
62	33	35	16	11	7	27	169	142	311	.66	.63	.65	4.53	5
3	4	15	5	22	211	337	321	294	615	1.53	1.55	1.54	2.68	6
37	34	26	24	27	24	9	162	120	282	.37	.30	.34	1.92	7
22	22	10	15	14	3	9	70	65	135	.22	.23	.22	1.21	8
199	120	278	642	1,738	1,361	681	2,783	2,626	5,409	1.38	1.46	1.41	2.56	
837	277	415	799	2,310	2,393	1,843	6,861	5,968	12,829	1.91	1.82	1.87	2.46	

Small-pox in the districts of Assam during each month of the year 1921.

August.	September.	October.	November.	December.	Total.			Number of deaths among children.		Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.	Number.
					Male.	Female.	Total.	Under 1 year.	One to 10 years.	Male.	Female.	Total.		
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	...	...	...	...	...	2	2	...	1	...	.008	.003	.63	1
10	7	2	13	15	458	302	760	24	36	.35	.24	.29	.30	2
11	7	2	13	15	453	304	762	34	37	.29	.20	.25	.36	
49	26	12	17	18	221	149	370	23	81	.54	.42	.48	.52	3
52	12	6	17	...	115	95	210	8	3	.28	.25	.27	.63	4
36	12	...	...	...	638	503	1,141	265	309	2.52	2.23	2.33	.29	5
41	10	3	37	29	92	70	162	1	2	.44	.37	.40	.10	6
3	1	1	...	7	46	41	87	5	2	.10	.10	.10	.79	7
4	2	4	1	3	25	17	42	2	7	.07	.06	.07	.12	8
185	63	26	72	57	1,137	875	2,012	304	427	.56	.48	.52	.49	
196	70	28	85	72	1,595	1,179	2,774	338	484	.44	.33	.40	.43	

IMPERIAL STATEMENT No. IX.—Deaths registered from Fevers

Number.	Districts.			Circles of Registration.		Villages.		January.	February.	March.	April.	May.
				Number in each district.	Number from which deaths from fevers were reported.	Number in each district.	Number from which deaths from fevers were reported.					
1	2			3	4	5	6	7	8	9	10	11
	SURMA VALLEY.											
1	Cachar	...	...	8	8	1,103	1,103	487	406	588	856	1,225
2	Sylhet	...	...	23	23	10,781	8,416	3,471	2,717	2,689	2,882	3,581
	Total	...	...	31	31	11,884	9,519	3,958	3,123	3,277	3,688	4,806
	ASSAM VALLEY.											
3	Goalpara	...	...	21	20	2,137	2,137	1,807	1,496	1,769	2,028	2,377
4	Kamrup	...	...	15	15	1,954	1,798	856	906	877	1,179	1,185
5	Darrang	...	...	12	12	1,406	994	522	433	581	564	741
6	Nowgong	...	...	10	10	1,495	49*	562	473	595	579	655
7	Sibsagar	...	...	15	15	2,143	1,221	606	680	763	670	961
8	Lakhimpur	...	...	13	13	1,702	1,404	488	361	396	393	331
	Total	...	...	86	85	10,837	7,513	4,791	4,349	4,981	5,423	6,250
	Total for the Province	...	...	117	116	22,721	17,032	8,749	7,472	8,258	9,111	11,056

* Mauzas.

IMPERIAL STATEMENT No. X.—Deaths registered from

Number.	Districts.			Circles of Registration.		Villages.		January.	February.	March.	April.	May.
				Number in each district.	Number from which deaths from dysentery and diarrhoea were reported.	Number in each district.	Number from which deaths from dysentery and diarrhoea were reported.					
1	2			3	4	5	6	7	8	9	10	11
	SURMA VALLEY.											
1	Cachar	...	...	8	7	1,103	191	56	67	56	79	115
2	Sylhet	...	...	23	21	10,781	1,581	239	211	221	256	351
	Total	...	...	31	28	11,884	1,772	295	278	277	335	466
	ASSAM VALLEY.											
3	Goalpara	...	...	21	17	2,137	85	7	10	12	20	29
4	Kamrup	...	...	15	15	1,954	284	43	95	83	46	61
5	Darrang	...	...	12	12	1,406	244	100	52	63	73	103
6	Nowgong	...	...	10	9	1,495	22*	20	14	14	19	30
7	Sibsagar	...	...	15	14	2,143	627	123	124	152	135	156
8	Lakhimpur	...	...	13	13	1,702	71	152	77	85	97	119
	Total	...	...	86	80	10,837	1,283	445	372	409	390	498
	Total for the Province	...	...	117	103	22,721	3,055	740	650	686	725	964

* Mauzas.

in the districts of Assam during each month of the year 1921.

June.	July	August.	September.	October.	November.	December.	Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.	Number.
							Male.	Female.	Total.	Male.	Female.	Total.		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1,186	758	683	513	550	730	647	4,443	4,186	8,629	16.98	17.52	17.24	17.18	1
3,012	3,136	2,762	3,083	3,573	4,116	3,849	21,046	17,775	38,821	16.08	14.42	15.27	18.57	2
4,193	3,894	3,445	3,596	4,123	4,846	4,496	25,489	21,961	47,450	16.23	14.92	15.59	18.35	
2,091	1,428	1,620	1,509	1,645	1,804	1,737	12,064	9,257	21,321	29.66	26.01	27.96	34.97	3
1,282	1,074	825	760	855	674	579	6,179	4,873	11,052	15.55	13.33	14.49	22.96	4
965	620	595	563	643	424	491	3,650	3,492	7,142	14.41	15.53	14.94	21.54	5
629	695	674	596	530	501	352	3,584	3,257	6,841	17.77	17.21	17.19	23.53	6
912	897	793	589	615	162	619	4,610	4,057	8,667	10.62	10.42	10.52	15.72	7
392	399	497	521	483	573	369	2,701	2,452	5,153	8.60	8.93	8.75	15.46	8
6,271	5,113	5,004	4,538	4,771	4,538	4,147	32,788	27,388	60,176	16.28	15.22	15.78	22.40	
10,469	9,007	8,419	8,134	8,894	9,384	8,643	58,277	49,349	107,626	16.26	15.08	15.70	20.43	

Dysentery and Diarrhœa in the districts of Assam during each month of the year 1921.

June.	July.	August.	September.	October.	November.	December.	Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.	Number.
							Male.	Female.	Total.	Male.	Female.	Total.		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
99	59	78	72	103	105	79	506	462	968	1.93	1.93	1.93	2.32	1
314	216	241	272	466	584	493	2,113	1,751	3,864	1.61	1.42	1.52	1.84	2
413	275	319	244	569	689	572	2,619	2,213	4,832	1.66	1.50	1.58	1.90	
27	25	21	35	25	25	18	143	111	254	.5	.31	.33	.44	3
97	80	67	55	82	43	18	441	329	770	1.11	.90	1.00	.90	4
147	142	201	192	115	73	64	635	625	1,260	2.11	2.78	2.63	4.46	5
28	40	35	37	32	20	20	190	133	323	.91	.72	.82	1.71	6
239	277	229	175	181	213	190	1,130	1,064	2,194	2.60	2.73	2.66	4.43	7
168	240	224	209	225	179	129	1,010	894	1,904	3.21	3.25	3.23	5.42	8
716	804	777	633	660	558	448	3,547	3,161	6,710	1.76	1.75	1.76	2.79	
1,129	1,079	1,026	977	1,229	1,247	1,020	6,168	5,374	11,542	1.72	1.64	1.68	2.36	

IMPERIAL STATEMENT No. XI.—Deaths registered from

Number.	Districts.			Circles of Registration.		Villages.		January.	February.	March.	April.	May.
				Number in each district.	Number from which deaths from respiratory diseases were reported.	Number in each district.	Number from which deaths from respiratory diseases were reported.					
1	2			3	4	5	6	7	8	9	10	11
	SURMA VALLEY.											
1	Cachar	...	...	8	6	1,103	124	100	84	101	233	201
2	Sylhet	...	...	23	22	10,781	788	219	164	165	182	228
	Total	...	...	31	28	11,884	912	319	248	266	420	429
	ASSAM VALLEY.											
3	Goalpara	...	...	21	16	2,137	37	15	21	100	153	19
4	Kamrup	...	...	15	14	1,954	129	56	127	93	79	69
5	Darrang	...	...	12	12	1,406	172	92	73	93	55	60
6	Nowgong	...	...	10	8	1,495	11*	11	16	23	18	9
7	Sibsagar	...	...	15	11	2,143	201	146	270	262	276	130
8	Lakhimpur	...	...	14	14	1,702	51	157	256	593	293	232
	Total	...	...	87	75	10,837	601	477	763	1,074	874	519
	Total for the Province ...			118	103	22,721	1,513	796	1,011	1,340	1,294	948

* Mauzas.

IMPERIAL STATEMENT No. XII.—Deaths registered from Plague

Number.	Districts.			Circles of Registration.		Villages.		January.	February.	March.	April.	May.
				Number in each district.	Number from which deaths from plague were reported.	Number in each district.	Number from which deaths from plague were reported.					
1	2			3	4	5	6	7	8	9	10	11
	SURMA VALLEY.											
1	Cachar	...	...	8	...	1,103	...	...	...	...	...	...
2	Sylhet	...	...	23	...	10,781	...	...	...	...	...	...
	Total	...	...	31	...	11,884	...	...	...	...	...	...
	ASSAM VALLEY.											
3	Goalpara	...	...	21	...	2,137	...	...	...	...	...	...
4	Kamrup	...	...	15	...	1,954	...	...	...	...	...	...
5	Darrang	...	...	12	...	1,406	...	...	...	...	...	...
6	Nowgong	...	...	10	...	1,495	...	...	...	...	...	...
7	Sibsagar	...	...	15	...	2,143	...	...	...	...	...	...
8	Lakhimpur	...	...	13	...	1,702	...	...	...	...	...	...
	Total	...	...	86	...	10,837	...	...	...	...	...	...
	Total for the Province			117	...	22,721	...	...	...	...	...	...

Respiratory diseases in the districts of Assam during each month of the year 1921.

June.	July.	August.	September.	October.	November.	December.	Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.	Number.
							Male.	Female.	Total.	Male.	Female.	Total.		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
142	104	73	54	70	82	94	743	600	1,343	2·84	2 51	2·68	4·49	1
221	170	167	132	205	203	208	1,349	915	2,264	1·03	·74	·89	2·95	2
363	274	240	186	275	285	302	2,092	1,515	3,607	1·33	1 04	1·18	3 19	
13	12	5	10	8	11	8	247	128	375	·60	·36	·49	1·47	3
27	13	12	11	33	16	20	327	229	556	·82	·62	·72	·55	4
55	47	...	53	37	54	54	378	295	673	1·49	1·31	1·40	8·30	5
26	24	17	14	17	15	16	108	98	206	·51	·51	·51	3·76	6
92	85	55	60	103	123	144	951	795	1,746	2·19	2·04	2·12	6·91	7
179	160	170	155	173	164	178	1,495	1,125	2,620	4·76	4·09	4·45	9·38	8
392	341	259	303	371	383	420	3,506	2,670	6,176	1·74	1·48	1·61	4·73	
755	615	499	489	646	663	722	5,598	4,185	9,783	1·56	1·27	1·42	3·98	

in the districts of Assam during each month of the year 1921.

[illegible]

APPENDIX II.

PROVINCIAL.

Statement showing details of registration in compulsory areas.

Compulsory registration area.	Population according to Census of 1921.	Estimated births at 286 per 1,000 married women between the ages of 15 and 40.	Number of births registered during the year.	Estimated birth-rate per mille.	Registered birth-rate per mille.	Number of deaths registered during the year.		Death-rate per mille.		Number of prosecutions under Act IV (B.C.) of 1873.	Number of convictions.
						Including deaths in hospitals.	Excluding deaths in hospitals.	Including deaths in hospitals.	Excluding deaths in hospitals.		
1	2	3	4	5	6	7	8	9	10	11	12
Silchar	10,204	Not available.	229	Not available.	22.44	162	99	15.87	9.70	...	...
Hailakandi	2,228		46		20.64	43	28	19.29	12.56	5	5
Sylhet	16,912		455		26.90	356	306	21.05	18.09	14	12
Karimganj	4,552		89		19.55	113	76	24.82	16.69	7	6
Maulvi Bazar	3,334		75		22.49	32	26	9.59	7.79	15	11
Habiganj	5,918		191		32.27	229	203	38.69	34.30	22	20
Sunamganj	4,881		120		24.58	118	112	24.17	22.94	16	11
Dhubri	6,707		213		31.75	232	187	34.59	27.88	28	19
Goalpara	6,212		191		30.74	228	189	36.70	30.42	9	5
Gauhati	16,480		399		24.21	440	290	26.69	17.59	31	11
Barpeta	11,730		534		45.52	276	270	23.52	23.01	32	21
Tezpur	7,341		186		25.33	99	46	13.48	6.26	16	15
Mangaldai	1,023		14		13.68	12	Nil	11.73	Nil	2	2
Nowgong	6,885		206		29.92	194	114	28.17	16.55	17	15
Sibsagar	5,329		135		25.33	75	63	14.07	11.82	4	4
Nazira	2,632		51		19.37	28	28	10.63	10.63	9	9
Jorhat	6,626		168		25.35	163	118	24.60	17.80	...	...
Golaghat	3,655		97		26.54	83	57	22.70	15.59	22	19
Dibrugarh	16,007		323		20.17	434	221	27.11	13.80	66	56
Doom Dooma	1,162		19		16.35	39	39	33.56	33.56	...	...
North Lakhimpur...	1,966		40		20.34	55	36	27.97	18.31	...	...
Total	141,784		3,781		26.66	3,411	2,508	24.05	17.68	315	241

GOVERNMENT OF ASSAM.

Resolution on the Annual Public Health Report of the province of Assam for the year 1921.

Extract from the Proceedings of the Governor of Assam and the Minister of Education in the Education Department, Public Health Branch, No. 2208E., dated the 19th June 1922.

READ—

The Public Health Report for the year 1921.

R E S O L U T I O N .

DURING the year 1921 climatic conditions were for the most part normal. The provincial-birth-rate was 33·57 per mille, compared with 31·53 in the preceding year, and with an average of 31·78 during the past five years. The death-rate of the province was 26·48 per mille, the corresponding figures for 1920 and the preceding quinquennium being 29·99 and 36·17. The district mortality during the year under review was lower than that of the previous year in all districts except Cachar, where cholera and fever were responsible for an increase. Compared with the rate for the previous five years, there was a marked fall in all districts. But all these figures are to be read with the reserve due to the general inaccuracy of the provincial vital statistics. Paragraph 9 of the report shows how gravely imperfect the record is even in towns where better things might be expected; and there can be no reason for thinking that greater accuracy is attained in rural tracts. Indeed it is certain that in some places the registration of births and deaths was unfavourably affected by political distractions during the latter part of the year.

2. In tea gardens the birth-rate during the year was 25·65 and the death-rate 25·80 per mille. The corresponding figures for 1920 were 25·89 and 31·51. These figures suggest that tea gardens are making slow progress toward normal conditions of health.

3. Deaths from all the principal diseases were fewer than the annual average of the preceding decennium. There was no acute epidemic of influenza and the mortality from fever in general came down to about the normal of the pre-influenzal period. In Shillong where outbreaks of diphtheria have been frequent, arrangements are being made to deal with them by such modern methods as the detection and immunisation of susceptible children. The mortality from cholera was heavy in Goalpara, where the deaths reported were nearly double the decennial average of the district. The predisposing cause was undoubtedly the floods which occurred during the year and brought about a scarcity of foodstuffs with attendant privation.

4. Dysentery and diarrhoea continue to levy a heavy toll from the tea gardens, the average death-rate on the gardens being 5·25 per mille, compared with the provincial death-rate of 1·68. A fairer comparison however is that with the death-rate in the preceding year in the same areas; and this shows perceptible improvement. At the same time there is no doubt that much of the sickness and mortality on the gardens is due to causes which would be preventible, if money were forthcoming for the initial expenditure involved in such special sanitary measures as the systematic disposal of refuse and adequate conservancy arrangements. Conditions differ on the various gardens, and probably no one system will be found suitable to them all. It may be expected that the Committee which is at present inquiring into the conditions of labour on the gardens will have suggestions to make. The Government know that many managers are alive to the need for improvement, and believe that but for the

recent depression more would already have been done. They hope that with the revival of the industry, this important matter will receive the attention it deserves; and they are convinced that money so laid out will prove to be very well invested.

5. The results of the measures taken against malaria under the supervision of the Public Health Department were satisfactory. In Lunding the number of attacks of malaria per head per annum has been almost halved. Similarly favourable results are reported from Pasighat. A detailed account of these operations has just been received from the Director, and will be published separately in the belief that it will be of interest both to scientific readers and the general public. Antimalarial observations have also been conducted on the sugar estate in Kamrup; and Lieutenant-Colonel S. R. Christophers, C.I.E., I.M.S., of the Central Research Institute, Kasauli, arranged to visit the place at the end of the year and give expert advice.

6. Small-pox was epidemic in the Darrang district, though it was confined to certain mauzas in the Mangaldai subdivision where vaccination had been neglected. Deaths from this disease at Golaghat were also high and this is attributed to laxity in the working of the compulsory Vaccination Act.

7. The main interest of the report lies in its account of the operations against *kala-azar*, which scourge has, ever since the great recrudescence in the year 1919-20, absorbed the main energies of the Public Health Department in the province. Fortunately the spread of the disease two years ago synchronised with the discovery of effective treatment for it. The efforts of the Department have since been directed mainly to perfecting the organisation for discovering cases and bringing them under treatment. The great value of segregation and migration from infected areas has for some time been known; but additional evidence of it is afforded by the Director of Public Health's account of what occurred in the North Cachar Hills. The hillmen usually turn patients out of the village, and burn the infected houses, and thereby compel them to move on to new sites. Eviction causes patients to seek admission in hospitals and the removal from the infected site results in the cured patients returning to an uninfected house. By this means the outbreak appears to have been almost extinguished. Unfortunately, as the Director observes "the plainsman does not or cannot shift his house with the same facility"; and the compulsory removal of people from infected areas is limited, if by no other cause, by the funds available for the purpose.

The actual number of cases of mortality from the disease in 1921 is rather higher than in 1920; mainly owing to an increase in the Nowgong district. How much higher the mortality would have risen but for the expansion of the efforts made to deal with the disease it is of course impossible to say. Facilities for treatment are now provided in practically every area where they are required. Civil Surgeons were placed more directly in charge of the operations in their districts during the year, and the policy of encouraging provision for treatment in Local Board dispensaries has also been pursued. The Government are glad to have evidence of the co-operation between medical and sanitary officers; and also of the recognition by the people of the efforts made to help them. It is a significant fact that all the political agitation in the province left the operations of the *kala-azar* staff undisturbed.

8. By the end of the year accommodation for nearly 400 in-door patients had been provided and nearly 16,000 patients had received treatment in them. If this number falls somewhat short of the hopes expressed in last year's report it still affords evidence of remarkable expansion of effort; and it may be hoped that the recent issue of apparatus for a new blood test, known as the "*formol-gel*" reaction, designed to facilitate the differentiation of true *kala-azar* cases from those of chronic malaria, will do much to make treatment easier. It must be matter for regret that a fairly large number of patients are reported to have abandoned treatment prematurely; such cases could be dealt with compulsorily under the regulations, but the Government desire that these should be used sparingly and only where special urgency exists. It is certain that the treatment is gaining in popularity according to the results achieved, and also to the persuasive efforts of the Sanitary and district staffs. The Government would have been glad had their finances admitted of an even more active policy; but they feel that there is ground for satisfaction with the organised efforts made and the measure of success attained. Whether the Director's anticipation that the worst part of the problem has been surmounted, and that fewer new cases may in future be forthcoming, proves right or not, the Government heartily agree with him that public expenditure could hardly be directed to a better end.

The Government of Assam cannot feel the same satisfaction with the present provision for the investigation of the disease. There is obviously a rich field for research

at hand, and the problem of prevention will not be satisfactorily solved till much more is accurately known about the carriage of the disease. The matter is one of vital interest to the population in this province, and the Government doubt whether existing arrangements for research are either complete or sufficiently co-ordinated. The Director will be asked to consider how they can be improved.

9. The Government are glad to notice the steady increase of expenditure upon conservancy. The only large sanitary scheme under construction in the province, *viz.*, the Dhubri water-works, was completed during the year. In the Lushai Hills the catchment area of the main reservoir of the water-works at Aijal was extended, and work on the improvement of the water-supply at Lungleh is also in progress. Substantial grants were given by Government to Local Boards in aid of the scheme for the improvement of the water-supplies in rural areas. An exception, however, to the general effort to improve sanitation in town areas, the Director reports that a prominent municipality has reverted to inefficient methods of disposal of refuse. The Commissioner will be asked to go into this question.

10. A Sanitary Inspector (now called Health Officer) has been posted to each of the Municipalities of Habiganj, Sunamganj, Karimganj and Sibsagar during the year, and four such officers have also been posted to Gauhati, Dibrugarh, Sylhet and Habiganj Local Boards for the furtherance of public health measures under the jurisdiction of the Boards. Eventually it may be possible to provide every Local Board with the services of a trained health officer, through whose advice and instrumentality the Board may be enabled to work out its own programme for the promotion of public health. An expenditure of Rs. 20,000 was incurred during the year on pay and allowances of the urban and Rural Health Officers lent to Local Bodies.

11. Major J. Taylor, D.S.O., I.M.S., was in charge of the Department up to the 4th July 1921, Captain S. R. Rao, Assistant Director of Public Health, held charge from 5th July to 21st August 1921, and Lieutenant-Colonel T. C. McCombie Young for the remaining part of the year. His Excellency and his Minister congratulate these officers on their efficient administration of the Department.

ORDERED that the Resolution and the Report be published in the *Assam Gazette*, and copies forwarded to the Commissioner of the Surma Valley Division, the Secretary of the Tea Labour Enquiry Committee and the officers mentioned in paragraph 11.

By order of the Government of Assam,

A. J. LAINE,

Second Secretary to the Government of Assam.

